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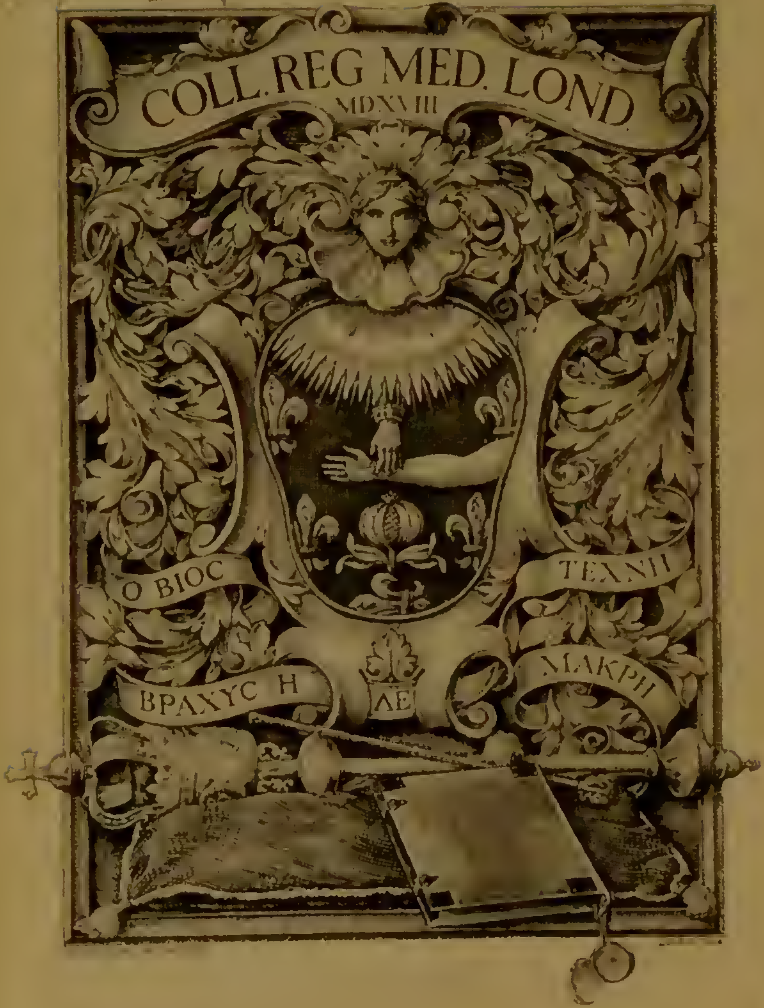

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LECTURES

DELIVERED AT

ST. BARTHOLOMEW'S HOSPITAL,

BY

MR. LAWRENCE.

THE LECTURES.

1. *Introductory: General Observations on Pathology, Surgery, Anatomy, Physic, &c.*
2. *Nature and Seat of Diseases.*
3. *Nature and Classification of Diseases.*
4. *Inflammation.*
5. *Its general Phenomena and Divisions.*
6. *Its Causes and Effects.*
7. *Sympathetic Inflammation; Disorder of the Digestive Organs.*
8. *Treatment; Bleeding.*
9. *Antimony; Mercury; Diet, &c.*
10. *Pathology and Treatment of Fever.*
11. *Suppuration, Formation of Abscess, and Treatment.*
12. *Recapitulation; Qualities of Pus; Chronic Abscesses; Mortification.*
13. *Hectic Fever and Treatment; Mortification resumed; its Causes, Prognosis, and Treatment.*
14. *Ulceration; Absorption; Granulation; Treatment; and Reproduction of Lost Parts.*
15. *Ulceration.*
16. *Mechanical Injuries, Wounds, &c.*
17. *Secondary Hæmorrhage; Healing of Wounds; Lacerated, Contused, and Gun-shot Wounds; Amputation; Nervous Symptoms consequent on Injuries.*
18. *Tetanus; Chemical Injuries; Effects of Heat; Scalds; Burns; Effects of various Acrid and Escharotic Substances—Potash, Ammonia, Lime, Muriatic Acid, and Nitrate of Silver.*
19. *Injuries of a Mixed Nature; Poisoned Wounds; Hydrophobia; Bites and Stings.*
20. *Hydrophobia continued; Bites of Venomous Serpents; Injuries received in Dissection; Malignant Pustules.*
21. *Specific Diseases; Scrofula, and its Treatment.*
22. *Treatment of Scrofula continued; Gout; Rheumatism.*
23. *Venereal Diseases; History; Syphilis.*
24. *Treatment of Venereal Diseases continued; Advantageous and Injurious Effects of Mercury; Diet.*
25. *Treatment of Venereal Diseases continued; Sarsaparilla, &c.; Chancre; its Varieties; Herpes Preputii; other Affections of the Prepuce; Treatment of Chancre.*
26. *Treatment of Primary Syphilis; Secondary Symptoms.*
27. *Secondary Symptoms in the Skin, soft parts of the Throat, Nose, Testicle; Warts; Syphilis in Infants.*
28. *Gonorrhœa; Treatment; Phimosis; Paraphimosis; Warts; Hernia Humoralis.*

LECTURES ON SURGERY,

MEDICAL AND OPERATIVE.

Introductory Lecture.

Gentlemen.—After teaching anatomy and surgery at this hospital for more than forty years, and never failing, I believe, on any one occasion during the whole of that period to open the winter courses of Lectures at the beginning of October, Mr. Abernethy is no longer able to continue those useful labours which have raised the medical school of St. Bartholomew's to so high a reputation, and contributed so signally to advance and elevate the profession of surgery. The strength of intellect which distinguished our great teacher was manifested at an early period of his career. He began to teach his profession at an age when others are occupied in learning it; that is, immediately on the expiration of his apprenticeship; and shortly after, he published the surgical and physiological essays which placed his name at once in the first rank of medical philosophers. The original turn of thinking and talent for observation displayed in these early productions, led to anticipations of future eminence, which were subsequently fully realised. His very high character, both as a writer and a teacher, is, however, so well known, and justly appreciated, that I need not enlarge on the subject, particularly in this theatre. I will only say, that we may ascribe to him the great merit of having been the first, by his writings and lectures, to excite and exemplify a more scientific investigation and treatment of surgical diseases; and he was one of the first in this country to vindicate the natural rank of surgery as a branch of general pathology. He taught us to extend our views beyond the narrow limits of local causes and remedies: he pointed out the more general influences, to which the diseases of parts owe their origin, and hence he deduced the general means of treating those affections. On this account he has been regarded as an intruder on the territory of physic, and has been accused of wishing to make surgeons physicians. If by this it is meant to charge him with the wish that surgeons should add to their surgical knowledge that of medicine, the accusation is just, and does him the greatest honour. By thus exciting surgeons to cultivate medical science generally, by thus reuniting two artificially separated parts of one great subject, which require each other's aid, he has at the same time signally benefited the public, and increased the respectability of his own profession.

The departments of Anatomy and Surgery, which were held conjointly by Mr. Abernethy, are now undertaken separately by Mr. Stanley and myself. It will be our business to keep steadily in view the example of our great predecessor. However far behind him in the capability of acquiring and imparting knowledge, we will not yield even to him in an earnest desire to render ourselves useful to our pupils, in a firm determination to discharge the duty we have undertaken to the best of our ability.

This alteration, however, will make some difference necessary in the arrangement of the subjects of the lectures. While Mr. Abernethy undertook both these departments, he could distribute the subjects as he pleased through the two courses; and he found it convenient, or thought it expedient, to give a considerable portion of surgery in his anatomical lectures. When I say a considerable part, I might say one half or two-thirds, including the performance of operations, and the states in which such operations are necessary,—the diseases of the bones,—the accidents to which they are liable,—the injuries and diseases of the joints,—and many other subjects. We shall allot to each department the diseases which properly belong to it; and as I purpose to go through the whole of surgery, it will not be practicable for me to give you two courses of lectures. We shall find that the subjects are so extensive and so numerous, that they will fill one course, lasting through the whole of the winter. I purpose to lecture on Surgery three times a week; and I conclude that this arrangement will allow sufficient time for including every thing that belongs to the course.

Surgery, gentlemen, is one division of the science or art which has disease for its object. This science, considered generally, embraces the physical history of man. It investigates the construction of the human body, and its living actions; it inquires into the purposes executed by each part, and into the general results of their combined exertions. It observes the human organisation under all the various modifications impressed on it by surrounding influences of all kinds; and it draws from these sources the rules for preserving health and removing disease. The practical application of these rules constitutes the *art* of *healing*, or, rather, of *treating disease* (for in many cases we are unable to *heal*, and do not even attempt it); while the assemblage of facts and reasonings on which these practical proceedings are grounded, makes up the *science* of medicine.

The boundaries of surgery have not hitherto been, and perhaps cannot be, very clearly defined; and the line of demarcation between it and physic is by no means easily traced. Considering the distinction between them to be a mere matter of arbitrary usage, I employ the word surgery in its common acceptation; understanding it to include—1st, injuries of all kinds; 2d, the greater part of external and local complaints; 3dly, such internal affections as produce changes recognisable externally,—for example, alterations of figure, colour, or consistence; 4thly, all cases requiring external topical treatment, operations, or manual proceedings of any kind. The subjects I have just enumerated form the catalogue which is treated of in the surgical writings of Mr. Samuel Cooper. It is of the same kind of subjects that Boyer and Delpech treat, when speaking of external diseases. The title adopted by the latter, "*Traité des Maladies reputées Chirurgicales*;" (treatise on the diseases *reputed* or *considered* surgical,) shows that the distinction is not better understood in France than in this country.

It must be confessed that the boundary just indicated, is obscure and uncertain. Hence, as in the case of contiguous governments with undefined possessions, disputes have arisen respecting the right to certain portions of territory. Injuries, operations, external local complaints, and manual proceedings, are undisputed possessions of surgery; but it is not easy to distinguish between external and internal diseases; here, in fact, surgery and physic join. Since it is found thus difficult to draw a satisfactory line of demarcation between physic and surgery, you will not be surprised to find, in a great majority of instances, that both are practised together in this country by one description of persons—surgeon-apothecaries. Nineteen-twentieths of diseases are under the care of this class of persons in the country, who are therefore styled general practitioners. On the other hand, in the metropolis, we find that these two branches of the profession are exercised by a different class of persons, whose education differs widely in some important points. They are taught by distinct teachers, in separate courses of instruction; and their regulation is entrusted by law to two distinct public bodies,—the Colleges of Physicians and Surgeons. Viewing these apparent contradictions, we are naturally led to inquire more narrowly in what the distinction between physic and surgery consists; whether in the nature of the diseases allotted to each, or in the mode of treatment; whether there is any essential difference in the mode of learning them; how and when the distinction arose; whether it is well founded, whether it tends to the advantage of the public, or merely to the benefit of physicians and surgeons.

Nothing like the modern distinction was made by the ancients; there is no trace of it in the Greek, Roman, or Arabian writers. Certain branches of practice were followed separately in Egypt, where the diseases of the eyes, the teeth, and even of some internal parts, were attended to exclusively by particular classes of practitioners; and some such distinctions existed in Rome. But Hippocrates, Galen, Celsus, and the other medical writers of antiquity, treat indifferently of the nature and management of fevers, injuries, external and internal disorders, and operations. In speaking of treatment, Celsus considers it under three divisions, the same which we still adopt, and mentions these under their Greek names, viz.: *διαιτητικη* (diet, &c.) *Φαρμακευτικη* (remedies), *χειρουργικη* (chirurgical, or manual proceedings). But the idea of splitting medicine into two parts, and of teaching tham differently, seems never to have been entertained by this elegant and philosophic writer, nor by those other founders and great promoters of medical science and practice, whose names and works are still regarded with deference and respect.

In the long night of barbarous ignorance which intervened between the downfal of the Roman empire and the revival of learning in the west, the treatment of diseases was preserved by the ecclesiastics. The exercise of medicine harmonized well with the more immediate object of their calling; but, after the council of Tours, held in 1163, had declared that the church abhors the shedding of blood (ecclesia abhorret a sanguine), priests and monks were obliged to desist from all curative proceedings that involve loss of blood. These were taken up by barbers, attendants on baths, itinerants, and mountebanks. In course of time, surgery, which then consisted merely of bleeding, tooth-drawing, and a few other simple processes, became, with the art of the barber, the occupation of a class of men, who were legally incorporated in this and other countries, under the title of barber-surgeons. The separation of surgery, or one branch of treatment, from that medical knowledge which is the indispensable guide to the time and mode of its application, and its association with the art of the barber, long outlived the circumstances which produced them. In England it lasted till the middle of the last century, when the Company of Barber-Surgeons was legally extinguished, in the reign of George II. The union of the two callings still exists in many parts of Europe.

In order to judge whether there is any well-grounded difference between physic and surgery, it is necessary to advert shortly to the nature of medical science and practice generally.

The numerous individual organs, which make up the human body, although various in structure and office, are all intimately connected and mutually dependent. They are merely subordinate parts of one great machine, and they all concur, each in its own way, in producing one general result, the life of the individual. All the leading arrangements are calculated to give a character of unity to the organisation and the living actions of our frame. There is a common source of nutrition for the whole body; a single centre of circulation; a common place of union for all sensations and volitions—for nervous energy of whatever kind. The various organs are not only intimately connected by the share which they severally take in executing associated and mutually dependent functions, they act and re-act on each other, often very powerfully, by those mysterious, or at least hitherto imperfectly-known influences, which we call sympathies. Hence the expression of Hippocrates, in relation to the human body, is perfectly correct: *Labor unus; consentientia omnia.* (One exertion; all parts concurring.) You could form no adequate notion of any organ, or system of organs, if you insulated it from the rest of the body, any more than you could estimate the use of action of any single wheel or lever detached from a watch or a steam engine.

As the animal machine, although complicated in structure, is single, and as its living motions, although numerous and intricate, form one indivisible series, so a similar connexion runs through those changes of structure and functions which constitute disease: hence there is one anatomy and physiology, and there can be only one pathology. If we wish to know any portion of the body, we must not only carefully examine the part itself, but survey the relations of structure and function which bind it to the rest; and, if we investigate any class of diseases, we must consider, not only the local symptoms, but also the disturbance which the diseased organs may excite in other parts of the frame, and the influence which other parts may exert over the seat of disease.

It must be the first business of the medical student to learn the structure of the body and its living actions; that is, to study man in the state of health. These are the objects of the two sciences, which are denominated anatomy and physiology. He then proceeds to the observation of diseases; he notices the circumstances under which they arise; he watches their progress and termination; he explores the organic changes which they produce, and learns to connect these changes with their appropriate external signs or symptoms; deriving from these comparisons the means of distinguishing the exact seat of disease, and predicting its course and event. These matters form the subjects of morbid anatomy and pathology. Morbid anatomy is opposed to anatomy; pathology is opposed to physiology. Anatomy regards the healthy structure; morbid anatomy the diseased one. Pathology regards the diseased functions; physiology those that are healthy. The student is now prepared to apply the external influences, such as diet, climate, exercise, the outward or inward remedies, or the surgical operations which may be necessary for the removal of disease, and the restoration of health. When disease is studied in this manner, in reference to the whole body, it constitutes the science of general pathology; as a similar investigation, directed to any single organ, is the pathology of that part. The real question respecting the distinction of physic and surgery is this:—after surveying the whole field of disease in the way just mentioned, can you find out any portions insulated from the rest? any division not connected with other parts, and which can be understood without reference to them? Can you separate this entire subject of disease into two independent halves, requiring different modes of study and practice? Certainly not. The entire structure and functions are universally and intimately connected. No part is independent. The causes that constitute disease are often to be found, not in the part itself, but in a remote portion of the frame; the means of cure are seldom to be applied actually to the part diseased: for instance, if a person has a gouty inflammation of the toe, no cause of disease can be ascribed to the part itself; but if you examine the state of the individual, you will find a full and strong pulse, and other marks indicating a fulness of habit, or plethora, as it is called; the tongue will indicate a disorder in the digestive organs, and your treatment must consist in adopting the means necessary to remove the fulness of habit, and to correct the digestive organs, and the patient goes on well without any application to the toe. Another person may have a paralytic affection of his finger, and you can discern no cause for it in the part itself; you will find every thing in the paralysed member perfect as to structure; but on examination, you find disease existing in the head; you take the means of allaying that disease, and then the paralysed parts recover the power of motion. In many cases, disease originating in one part affects a great many other organs of the body; and very often the secondary disease thus produced attracts more attention than the original complaint itself. A person has an affection of the head, which may be produced by various causes, and, within a short time, the circulating system, the digestive organs, and the secretions, become deranged, and he is in a state of continued fever,—another individual receives an injury —inflammation is set up in the part, and in a short time the same febrile disturbance arises. The patient has a sympathetic fever in both cases, and the latter disease seems of more consequence than the former.

Again, although individual organs are numerous, the elements of organic structure are few. The various proportions in which they are combined make the difference, as the various combinations of a few letters produce the infinite variety of words. The basis of nearly all parts consists of the cellular, vascular, absorbent, and nervous structures. Hence, pathological principles are the same for all parts, and, consequently, treatment must be similar throughout. When diseases are arranged in any form, you may strike a line through, so as to divide the mass into two halves, give them different names, and call them distinct branches of science, but they will resemble each other in all essential points: the causes, origin, course, and treatment of the diseases comprehended under each, will be the same. If you must have a division, separate the two sides of the body, or the upper and lower halves. This will, at least, be clear and intelligible. To assert that surgery and physic are essentially distinct, is to say that there are two kinds of pathology; that the external and internal parts are to be treated on different principles. It would be as rational to say that there are two kinds of physiology, one for the outside, another for the inside, of the body. When you know that the component tissues, or the organic elements of our frame, are the same throughout, can you suppose that the position of a part in the body can alter the nature and treatment of disease? It may cause differences in the mode of proceeding; thus you cannot act locally on internal parts; it may make the pathological investigation of one organ more difficult or easy than that of another; but it cannot alter essential principles. Inflammation, for instance, is the same kind of disturbance, whether in an internal or external part, and we treat it exactly on the same principles, whether it be in the eye, breast, or testicle; in the heart, lungs, or liver. The principles of pathology, therefore, are general; they are the same for all parts of the medical art. They result from our knowledge of health and disease generally, and must, therefore, be common to the physician and surgeon. Hence we may truly say, with Mr. Abernethy, that surgery and physic considered as objects of scientific investigation, are one and indivisible. We may go further, and assert that no branch of medicine, however limited, can be thoroughly understood except by him who has carefully studied the structure and actions of the whole frame, and then extended his view over the whole field of medical science.

By those who are inclined to defend the existing distinctions between physic and surgery, various views have been taken of it; but none of them will bear examination. Internal diseases have been assigned to the former, external to the latter. Unfortunately for this notion, nature has connected the outside and inside so closely, that we can hardly say where one ends and the other begins. She has decreed that both shall obey the same pathological laws, and has subjected them to such powerful, mutual influences, that we cannot stir a step in investigating the diseases of either, without reference to the other. How deep would the domain of surgery extend, according to this view? Half an inch or an inch? The entrance of the various mucous membranes, presents a series of puzzling cases: and the distribution of diseases in these situations, between the two branches of the profession, is quite capricious. How far is the surgeon to be trusted? He is allowed to take care of the mouth: where is he to stop? at the entrance of the fauces, in the pharynx, or in the œsophagus? Inflammation and ulceration of the throat from syphilis belong to the surgeon; catarrhal affection of the same membrane to the physician. Polypus and ulceration of the nasal membrane are surgical; coryza is medical. The affections of the bones and joints have been given to the surgeon; yet they can hardly be called external parts. In hernia and aneurism there is external tumour; but it is produced by displacement or disease of organs that are quite internal.

When we look to the nature and causes of disease, the absurdity of the distinction now under consideration is still more apparent, and the inseparable connexion between the interior and exterior of our frame more obvious. Internal causes produce external diseases, as we see in erysipelas, carbuncle, nettle rash, gout, œdema; while external agencies affect inward parts, as in catarrhal rheumatic affections, and various inflammations of the chest and abdomen from exposure to cold. In all these affections, our great reliance is on the internal treatment; external and local means are comparatively unimportant.

The eyes have been entrusted to the surgeon as external parts: yet the organ is the most complicated in the body; and many of its component tissues are highly organised, so that its affections are very much diversified, and require a greater insight into pathology and therapeutics than those of any other single part. The eye, with its appendages, not only contains mucous, serous, and fibrous membranes, muscular, glandular, and nervous parts, but also several peculiar tissues. It not only exhibits the various affections of these produced by common disease, but it suffers from gout and rheumatism, from small-pox, measles, scarlatina, and chronic cutaneous eruptions; from scrofula and syphilis, cancer, fungus hæmatodes, and melanosis.

If, therefore, an organ so complex in its structure, and liable to such a number and variety of diseases, can be safely entrusted to the care of the surgeon, I am at a loss to know why there should be any distinction, grounded on the nature of the affections, between the surgeon and physician.

It is in vain, then, to establish separate professorships of external and internal pathology; to institute distinct colleges of physic and surgery; and to teach them as separate sciences, and to expect that they shall be practised separately. Neither lecturers nor authors can make the distinction, and thus we find the same diseases are often considered by both; they are treated on the same general principles, and regarded in the same manner.

Some have proposed to assign local diseases to the surgeon, and general ones to the physician. It may be questioned whether there are any local or general diseases in the strict sense of the terms: at all events there are very few in which the cause has been applied to the part itself, and the influence of the disease, as well as of the treatment, does not go beyond it; while, on the other hand, there are hardly any in which all parts of the frame are affected. When a part of little consequence in the animal economy is slightly diseased, no sensible effect may be produced beyond the part itself; if, on the contrary, an important organ is actively disordered, many other parts feel the influence; and hence arise general or constitutional diseases. Even in fever we can clearly trace the general disturbance to a local origin, in ninety-nine cases out of a hundred; so that the very existence of fever, as a general affection, has been questioned. The difference, therefore, between what we call local and general diseases is merely in degree, not in kind: it is a difference of more or less. If we were to arrange diseases in one column, beginning with the most local, and ending with the most general, we should fill up the interval with others forming an insensible transition between the two extremes. Where could we draw the line across, to divide surgery and physic, on a scale thus constructed?

Reverting to the nature and extent of the duties, which originally constituted the occupation of the surgeon, and looking to the etymological import of the term, which is *manual operation*, it has been contended that surgery should embrace those cases only in which operations or other manual aid are required. Thus it has been represented, that the province of surgeons is to administer to external ailments; and that among their duties is included the important negative one of prescribing no internal remedy whatever. Such notions are worthy of the ignorance to which the unnatural separation of surgery and physic owes its origin, and of the dark period in which it occurred. According to such views, the distinction would depend not on the difference in the treatment of diseases, but on the accidental and often varying circumstances of the mode by which the object is to be accomplished. What are we to do with the numerous cases, such as serious inflammations, affections of the head, various gouty and rheumatic diseases, in which change of diet and internal remedies are necessary, in conjunction with topical applications, or with the surgical operations of phlebotomy, cupping, leeching, seton, or issue? How shall we dispose of those, in which these different modes of proceeding become necessary, in succession; for example, in retention of urine or hernia? In the latter, a series of manual proceedings, topical applications, and internal administrations, employed either successively or in conjunction, is often followed by a surgical operation. In many instances it is a mere question of degree, whether internal remedies shall be trusted to alone, or whether surgical operations shall be added. Thus a slight affection of the head may be removed by purgatives and abstinence; while a more serious degree of the same affection will require, in addition, bleeding, cupping, leeches.

If it is meant to confine surgeons to operations and manual proceedings, and thus to reduce surgery to a mere mechanical department of the healing art, I must enter my strongest protest against the arrangement. I should feel degraded in exercising this kind of barber-surgery, and should be little inclined to attempt touching it. If our profession were reduced to this, it would no longer be necessary for us to study its scientific principles. We might spare ourselves the toil and trouble of learning anatomy, physiology, pathology, and therapeutics; and we might well resign into the hands of our old associates, the barbers, the contemptible remnant to which surgery would then be reduced.

In considering the subject historically, we cannot deny that surgery consisted, originally, of this limited, mechanical, and subordinate department, which was exercised under the direction, and by the permission of physicians; but surgeons have long emancipated themselves from this degrading bondage, and will surely never again submit to such ignominious trammels. They have cultivated, with ardour and success, the scientific foundations of their art. They can adduce the rapid progress of surgery since the middle of the last century, and its present undiminished rate of progression, in proof that their claims on the confidence of the public are not inferior to those of any other branch of the medical profession. They can point out, in their modern annals, the names of many who have been the largest contributors to the advancement of medical science. Among these may be mentioned that of Mr. Pott, so long a surgeon of this hospital. He was an able practitioner, a clear and elegant writer; and has been regarded, both abroad and in his own country, as one of the great modern improvers of surgery. He, however, is thrown into the shade by the transcendant merits and more brilliant reputation of his cotemporary and rival, John Hunter, the greatest man in the medical profession, either of ancient or modern days, without excepting even the immortal discoverer of the circulation. In contemplating this extraordinary character, we are at a loss to determine whether he surpassed others most in genius or industry. The searching glance which he directed into the construction and actions of all living beings, the novelty of his views, and the splendour of his discoveries, strike us with astonishment; but we can hardly believe it possible that the invaluable treasures of his museum could have been formed and collected by one person. To these great names we may add that of a kindred spirit, who entered with ardour on the path they had pointed out, and followed it into new regions of speculative and practical knowledge; I mean the founder of this school, Mr. Abernethy. Fellow-labourers in the same cause have not been wanting in France, Germany, and Italy. It will be sufficient to enumerate Jean Louis Petit, and the other members of the French Academy of Surgery; Desault, Richter, Bichat, and Scarpa. The two latter have been among the greatest contributors to the progress of anatomy and physiology since the time of Hunter.

The attempt, however, to reduce surgery to its ancient limits—to the art of plasters, bandages, bleeding, and tooth-drawing, which constituted nearly its whole encyclopœdia in the *venerable* times of barber-surgery, comes too late by a century or two. If it could succeed, it would be equally detrimental to the public, and disgraceful to our profession. In those serious cases, in which external injury or disease is connected with more or less general symptoms, as in compound fracture, attended with fever; in injuries of the head, with nervous symptoms and fever: in erysipelas, supervening in local injury or disease; in strangulated hernia, in retention of urine, it is the obvious interest of the patient to be under the care of men who understand the case in all its bearings. It matters not to him whether the person thus capable of rendering him service belongs to this college or to that, or even if he should belong to no college at all. The surgeon who understands only the local, and the physician who knows only the general, treatment of such cases, are, each of them, only half informed: and the two together deserve much less reliance than one who is conversant with the whole. The confidence which ignorant persons are inclined to repose under such circumstances, in what they call a combination of talent, is quite fallacious, if the combination consist of a surgeon ignorant of the general, and a physician who knows nothing of the local, treatment In many of these serious cases, the mere local means are of little importance, while the fate of the patient depends on the general treatment; so that a surgeon, ignorant of the latter, is incompetent to the duties of his profession.

Let me take this opportunity of observing to you, gentlemen, that the performance of operations is often the least important part of the surgeon's duty, even in cases requiring them. To judge whether a complaint is curable by other means; to perceive when an operation is advisable, and to determine when to becomes necessary; to prepare the patient for it, and to manage the case well, after the operation has been performed, are points of equal, and often superior, importance. I do not mean to speak lightly of operations; it is quite necessary that you should carefully study this branch of surgery, and prepare yourselves for operating on the living by cutting the dead. But you must not attach the first importance to a description of duty which you will very seldom be called upon to execute. It is a great mistake to suppose that any surgeon is principally employed in operating. It is the boast of modern surgery to have greatly diminished the number of operations. I should think that there are not so many performed in this hospital, as there were twenty-five years ago, by one-half or two-thirds. The difference has arisen from improved knowledge of the nature and treatment of disease, acquired by the anatomical, pathological, and practical researches of surgeons. Thus, whatever view we may take of the subject, the same conclusion forces itself on the mind with irresistible evidence, viz., that there is no natural distinction between surgery and physic; that they are merely parts, and inseparably united parts, of one science and art; that the practical principles rest in both on the same scientific foundation; and that the two branches of the profession must, in most instances, adopt the same proceedings, because they have the same purposes to accomplish, while their occasional differences are merely unimportant modifications in the means of arriving at the same end. Thus the distinction turns out, at last, to be quite arbitrary; to depend on, and be regulated by usage; founded in no fixed principles, and, therefore, fluctuating and uncertain, like all matters of custom.

A knowledge of the structure and functions of the body is the basis of all rational medicine. Doctrines, systems, and theories, which will not bear examination by the test of anatomy and physiology, are only to be regarded as random guess-work, or idle dreams. No one would attempt to mend a clock, watch, steam engine, or the commonest piece of machinery, unless he understood its construction, unless he knew,—what we may call its anatomy and physiology, that is,—the nature of the materials which compose it, the configuration, adjustment, and mutual action of the parts. Yet persons are constantly attempting to rectify the disorders of the human machine, not only with a slight and vague knowledge of its construction, but even in perfect ignorance of it, although, as a piece of machinery, the human body is far more complicated than any instrument of human fabrication.

No man who aspires to a scientific knowledge of his profession, can neglect the sciences of anatomy and physiology, because they afford the foundation and criterion of all medical doctrines; but correct anatomical knowledge is especially necessary to the surgeon as a preparation for his ordinary duties; without it he cannot determine the seat and nature of disease; he cannot distinguish between the affections of contiguous parts; he cannot understand the varied nature and appropriate treatment of injuries, such as fractures, dislocations, or wounds of blood-vessels and other soft parts.

If you ask how much knowledge of anatomy is necessary for a surgeon, the answer is short; as much as he can get. Your study of anatomy must be general; it must embrace the whole frame, unless indeed you should know of any part which is out of the reach of injury, or exempt from the attacks of disease; or any region which can never be the subject of operation.

Operations may, in some instances, be executed mechanically, by following certain rules; but if things do not go on exactly according to the description, the operator, ignorant of anatomy, is immediately confused, embarrassed, frightened. In most cases, too, unless the knife be guided by minute anatomical knowledge, operations are attended, not only with unnecessary suffering and risk to the patient, but also with the greatest danger to the reputation of the operator.

I trust, gentlemen, that you will not be anxious to discover how small a stock of scientific knowledge will enable you to carry on the trade of surgery. Your more honourable way will be to render yourselves accurate anatomists, as the most essential step towards becoming good surgeons. The health, the limbs, the lives of our fellow-creatures, are entrusted to our care, with a confidence in our knowledge, skill, and humanity; our utmost exertions and most anxious toil after information will not do more than enable us to undertake this serious responsibility. What kind of feelings, what conscience can the man possess who can plunge an instrument into the human body without knowing what he may divide or injure? Who can operate without that full anatomical knowledge, that will enable him to meet every emergency? How could he bear his own reflections, if serious and permanent injury, or loss of life, should ensue, as the consequence of his ignorance and rashness?

But the study of anatomy and physiology does not make us acquainted with disease: you may know the structure and functions of an organ perfectly, and yet be ignorant of its diseases. How, then, are those to be learned? Not from lectures, nor from writings; but by studying the great book of nature. You must frequent the hospital and the sick chamber, and observe diseases for yourselves. Lectures and books are auxiliaries, and, under certain circumstances, very useful ones; but they are of secondary importance compared to actual observation.

To know disease, then, you must see, examine, and closely watch patients; you must observe the origin and progress of the altered functions during life, and then investigate, after death, the changes produced in the organisation. Here your knowledge of anatomy and physiology will be of the greatest service. How can you appreciate the effect of disease, unless you know the healthy structure? How can you refer the altered functions or symptoms to the organic changes which have produced them, especially in internal organs, unless you know the healthy functions? The general doctrines of disease and treatment can only be judged by the lights of anatomy and physiology; the greatest portion of medical theories is obviously unable to bear this scrutiny, and may be at once dismissed.

The wards of an hospital are the best school of medicine; and clinical study, under the guidance of a competent teacher, is the best mode of learning. You will immediately inquire whether it is not necessary to hear lectures and read books before you begin to see patients. I advise you to resort as early as possible to nature—to that source from which the great masters of our art have derived their information; from which lecturers and authors must derive their knowledge. In learning anatomy, you have the facts demonstrated to you by the teacher, and you examine and explore them for yourselves by dissection. In the same way, demonstration of the phenomena of disease on the patient by the teacher, and the actual observation of them by the learner, are the only means by which real knowledge of the subject can be acquired. The facts thus presented to the senses make a stronger impression than any description, even by the ablest lecturer or writer; while the information which a person thus acquires for himself from nature, can always be depended on, and is never forgotten. Between him who has only *read* or *heard*, and one who has *seen*, there is the same difference, in point of knowledge, as between a person who has merely perused the description of foreign countries, and another who has actually visited them. To secure these advantages to their full extent, instruction should be strictly clinical; that is, the symptoms of disease, and the changes it produces, should be actually pointed out and explained on the patient; their origin, progress, and connexion, should be illustrated, and the indications and modes of treatment should be deduced from the facts thus immediately observed. This kind of clinical instruction can only be given at the time of the visit. I have always endeavoured to explain diseases in this manner to the pupils of the hospital, and I shall continue to illustrate clinically in the wards the general doctrines which I deliver in this theatre.

Clinical lectures delivered, as they usually are, without the presence of the patient, and to an audience, many of whom have not seen the cases, may be very useful; and the gentlemen who attended this school last winter, know that Mr. Earle's clinical discourses were replete with valuable information. Mr. Earle, however, knows well that they do not supersede the necessity of clinical instruction in the wards; and he, accordingly, pays particular attention to the latter point.

After beginning to observe diseases for yourselves, you may have recourse, with advantage, to lectures and books, which may be of great use in teaching you how and what to observe; in pointing out what might escape observation; in elucidating what may be obscure and perplexing; in rectifying erroneous conclusions; and in impressing the results of observation more strongly on the memory.

I cannot help thinking, however, that too much importance has been attached to lectures. From the long prevalent custom of attending them, and the regulations of the public bodies which require certificates of attendance on them, before admitting candidates to examination, the belief seems at last to have been produced, that medical science can be learned from them alone. This is a great mistake. The medical sciences rest on observation, and are only to be acquired by resorting to nature. The great number and intricacy of the phenomena are additional reasons why we should examine for ourselves, and not take the facts at second or third hand. A few cases attentively observed, will teach you more than any lectures or books. If you attend to nature with an unprejudiced mind, you cannot go astray. Lecturers and writers often copy from each other, without resorting to the fountain of knowledge. Can we wonder that they frequently mislead and deceive, instead of instructing?

Proceeding in natural order, you will begin to study external affections, and then pass to those of internal parts. In the former, the origin, progress, termination, and effects of disease, and the operation of treatment, are obvious to the senses. Here the evidence is clear; and the principles derived from this source must be applied by analogy and induction to the more obscure affections of internal organs. Hence a physician should begin by studying surgery; and he who has made himself a good surgeon, has accomplished much of what is necessary towards becoming a good physician.

Do not imagine, however, that the knowledge of surgery alone will qualify you to practise physic. Internal diseases, and the more general affections, which together make up the department of the physician, form a very arduous and important branch of study, which will require much time and the closest attention. The obscure nature of inward disease renders its investigation much more difficult than that of outward affections. You will, therefore, embrace every opportunity of studying this subject practically, as well as by lectures and books.

Your study of disease, gentlemen, both in nature and books, should embrace the whole range of the subject. To the great majority of you, who will have to act as general practitioners, this is obviously necessary; you will hardly meet with two or three cases in a hundred requiring a treatment exactly similar. I consider a comprehensive acquaintance with the entire circle of medicine equally necessary to those who mean to practice surgery only. If the *pure* surgeon is to rank higher in public estimation than the general practitioner, will he rest his claim to this superior dignity on the circumstance of possessing a lower amount of knowledge? It is necessary that surgeons should apply, in their own department, the principles and modes of relief deduced from a survey of medicine generally. The manual part of surgery is far less important than the medical; and it would be indeed disgraceful to our profession if surgeons were not competent to the management of surgical cases without the assistance of any other practitioners. Moreover, an eminent surgeon, who has the thorough acquaintance with anatomy, physiology, and the general principles of medical science, necessary to such a character, will be constantly consulted in all kinds of circumstances, and more especially in cases of obscurity, difficulty, and emergency. If he says that he has not studied this, that he knows nothing of that, that he cannot direct the treatment of a case under such and such occurrences, what can he expect but to forfeit the confidence of those to whom his ignorance becomes thus exposed, and in whose estimation he must be hereafter contented to rank below the general practitioner?

I do not recommend you, gentlemen, to read many books in the commencement of your surgical studies. Seeing and examining will be more useful to you than reading. The elementary works of Mr. Samuel Cooper will be sufficient for the beginner,; I mean his "First Lines of the Practice of Surgery," and his Dictionary. The latter is in itself almost a complete surgical library; and its ample references will point out to you the sources of further information. You may extend your study to the writings of Mr. Pott; to those of Mr. Abernethy, more particularly to his work on the constitutional origin and treatment of local diseases; and to those of John Hunter. The latter, however, are hardly fit for beginners.

To those who wish to become thoroughly acquainted with the profession of surgery, I recommend the acquirement of a knowledge of Latin, French, and German; for there are numerous sources of information in these languages.

You will understand, gentlemen, from the observations which I have now had the honour of addressing to you, that in selecting the medical profession you have set yourselves no very easy task. The study of medicine is, indeed, an arduous undertaking. The most comprehensive mind, and the greatest industry, might find occupation for many years in acquiring the whole circle of medical knowledge; you will have reason to lament that you cannot employ a longer time in the preliminary studies which are necessary as a qualification for *practice*, and the active duties of your profession; and you will therefore see the necessity of improving, with the greatest diligence, the opportunities of information that you now possess, and which you will never be able to recall. Let me observe, at the same time, that among all the various objects which can engage the human mind, there is no better exercise of the intellectual faculties, no more attractive and interesting pursuit, than the study of the medical profession; for while its practice has the most salutary moral tendency of repressing selfishness, and calling forth and strengthening all the benevolent and social feelings, our studies embrace all the most interesting parts of natural knowledge. Our first and immediate object is to learn the construction of our own frame, the means by which we live, and move, and have our being: we see the nature and operation of those influences by which health is interrupted and restored, by which disease and suffering may be averted. Chemistry, natural philosophy, and natural history, auxiliary sciences, are more or less immediately connected with the primary objects of our pursuits. Thus we are led to the contemplation and study of nature, and the investigation of truth. We are not called upon to defend any doctrines or systems, or to uphold any set of opinions. We have no interest at variance with those of the community. In professional intercourse with our fellow creatures, we are known only as instruments of good; in restoring or securing health, the greatest of blessings; in removing pain and sickness, the greatest of evils; in soothing the acute anguish, and quieting the alarm which friends and relations feel for each other; in protracting the approach of that awful moment, from which we all shrink back with instinctive dread, the termination of existence. The happiness or misery of life, and the very question of life or death, often hang on our decisions. I trust that, bearing in mind the serious nature of those duties, you will be anxious to employ the short period of your studies to the greatest advantage, and allow no opportunity of gaining knowledge to pass unimproved; you will thus become respected members of an honourable profession, and prepare for yourselves, in the decline of life, the sweetest of all rewards—the retrospect of labours devoted to the good of others.

LECTURE II.

On the Nature and Seat of Diseases.

It is the object of medicine to ascertain the nature and seat of diseases, in order to discover the proper modes of treating them. If we understood in each instance what organs are diseased, and how they are affected, there would be very little difficulty about the treatment. We should then be able to give an appropriate name to each disease, and to arrange them according to their natural affinities; that is, we might establish a rational nosology, or arranged catalogue of diseases. Unfortunately, in a great many instances, we are unable to determine the nature of disease, and in not a few cases, we cannot even settle the exact seat of it. Hence you will not be surprised at finding, that the names of diseases are in many instances calculated to mislead, and that those catalogues of diseases that are called nosologies, are often really worse than useless. The difficulties that I allude to are, however, not experienced so much in that part of the subject which is the immediate object of our attention, viz. the surgical department; they are more felt in affections of the internal organs, where the means of investigation are not so numerous, and where there is greater difficulty in all parts of the inquiry,

Most persons imagine that they understand very well the meaning of health and disease; yet it is not altogether easy to give a definition of those two states that is completely satisfactory. Health and disease have been said to be opposite states, and, under certain circumstances, we may admit this representation to be correct. For example, a person in a state of full health may be considered to be nearly in an opposite condition to a person in the last stage of a typhus fever. However, health and disease are not to be regarded simply as two states that can be thus contrasted; for under each of these terms there is included a great variety of conditious, differing materially from each other. On the one side, the state of health passes, by insensible gradations, into disease; and on the other, the state of disease is shaded off, if we may use the expression, into health; so that when we come to the point where the two conditions approach each other, we often find difficulty in determining what is health and what is disease.

The human body is an aggregate of organs, each executing its own function, and all concurring in the general purposes of the organization, which are, to preserve life, to keep up the relations which connect the individual with the surrounding world, and to continue the species. When the structure of the organs is perfect, and when the functions are regularly executed, the individual is said to be well, or in a state of health. The notion of health, therefore, combines these two circumstances—perfect structure and perfect functions, *i. e.* perfect in reference to the purposes just mentioned.

The word natural, as applied to the healthy structure, is rather equivocal, for we must admit, that disease is a part of nature. The French and Germans use the word normal, in order to designate what we call the healthy structure. This term normal is about equivalent to the English expression regular. Thus the normal, regular, or healthy structure, and the regular execution of the functions, would be opposed to the diseased or the irregular structure of the organs, or to the imperfect or irregular execution of the functions.

Disease has been defined an imperfect or irregular execution of one or more functions. This definition is very defective; it omits a circumstance of principal importance in the consideration of disease, namely, the state of the organs. The definition is true, so far as it goes; that is, wherever we see an imperfect or irregular execution of any function, we may safely conclude that disease exists. But we may have disease, and that of a very unequivocal kind, without any observable deviation from the natural state of any function. Warts and corns are considered diseases; at all events, adipose and encysted tumours are so: yet those may arise, and acquire considerable size, without the individual being actually aware of their existence; and even when they have arrived at very considerable magnitude, they do not disturb any function; they are perhaps only inconvenient by their bulk. But suppose we take the case of even so formidable a disease as that of cancer affecting the female breast. Cancer will commence with induration and swelling of the mammary glands; and this will take place so insensibly as to attain a considerable size before the female is aware that any change has occurred, and, in fact, the tumor is discovered accidentally.

You will see, therefore, from these various circumstances, that the definition of disease, if it turn on the state of the functions, is by no means satisfactory; we must at all events regard, as of principal importance, the state of the organs of the body.

We may call disease a deviation from the normal, regular, or healthy state of any solid or fluid part of the body, or of any function. These various circumstances may be exemplified in the case of the stomach. The stomach may be in a state of inflammation, or of cancer; in both cases there is a manifest change in the structure of the organ; in the former a temporary, in the latter a permanent change. In the case of heartburn, there is an acid secretion in the stomach; and in the yellow fever, there is a morbid secretion evinced by the ejecting and vomiting from the stomach of a peculiar dark substance, something like coffee grounds, which is called the black vomit. Here you have the fluid secreted by the stomach completely changed. Again, in nausea, sickness, and indigestion, you have the functions of the stomach impaired, and the organ deficient in the office which it has to perform. So that in the case of the stomach you see exemplified the three kinds of alteration which are mentioned as constituting disease—a deviation from the natural state, so far as the solid goes, or a deviation in the state of fluid secretion, or an alteration in the condition of the functions.

You will, perhaps, be inclined to think, that the three circumstances which are included in the definition I have now mentioned, might be properly reduced to one. You will ask, whether the function of an organ can be disturbed, if the structure remain entire? You will inquire if the fluids can be altered, so long as the solids remain in their natural state? These questions are very reasonable and proper. If a change of the functions implies an alteration in the state of the organs, and if a change in the state of the fluids involve an alteration in the state of the solids, then the definition of disease would merely embrace the alteration that may be produced in the organ itself. I can entertain no doubt, that if our knowledge of disease were perfect, we should be able to trace, in every instance, the alteration of function to change in the state of the organ; but, unfortunately, our knowledge of disease is by no means perfect. In many instances we see impaired function, when we cannot ascertain what the condition of the organ is, more especially in internal disease. In other cases there are altered functions, or manifest symptoms of disease, but we are unable to say what organ those symptoms should be referred to. Therefore, in our present imperfect state of knowledge, we must admit alterations in the functions, or change in the state of the fluids of the body, as diseases, without meaning to assert that they can take place independently of alteration in the organs themselves. We admit such a change in the function to be disease, because we do not happen to be able to say precisely what is the condition of the organ to which the function belongs; but we do not assert that the organ continues unaltered in a state of disease.

The changes which the organs may undergo differ in degree. They may be so considerable as to be visible after death, or there may be an alteration merely affecting the living condition of the part, and not leaving behind it any trace discoverable after death. I do not believe that a function can be impaired while the organ remains in a perfectly regular and healthy state; for, in fact, what are the functions of the body? Merely the results of the exercise of the organs. The functions are the organs themselves in a state of active exertion; the organs and the functions are causes and effects. Perfect functions imply natural or healthy organs; imperfect or irregular functions, suppose disordered organs. To say that the functions are disordered without any change in the organs themselves, would be to say that an effect has taken place without a cause.

We come back, then, to the point just mentioned, viz. that in considering the changes that may take place in the organs of the body, we must divide them, first, into those serious changes which are visible by examination after death; and, secondly, into those slighter changes which affect merely the living condition of the parts, and are not ascertainable after death. The living condition of any organ which is necessary for the regular execution of its function, comprises not only the structure as we see it after death, but also the various internal movements which belong to a part in a healthy living condition. It includes also a healthy state of all the fluids, whether circulating or at rest; a regular supply of new materials, a regular removal of the old parts, the influence of the nervous system, and, in many cases, the sympathetic operation of other organs. Now nearly the whole of these latter circumstances elude our observation; we have no means of ascertaining them; sometimes we see how organs are affected by the kind of changes I have just now alluded to. The function of the brain, for example, will be suspended; sensation and voluntary motion will be at once put a stop to, when the action of the heart is suddenly stopped, as in syncope; or when the function of the lungs is interrupted, as in suffocation; yet, if we examine the brain, we do not find any change in its structure. But what happens if the heart stops its action? Why, no more blood is sent to the brain—it no longer continues to furnish that supply of blood which is one of the necessary conditions to the healthy influence of the brain over the other parts of the body. In consequence of the supply of blood being thus suspended when the heart stops its action, the brain no longer exercises its influence, and sensation and volition are at an end. When the functions of the lungs are impeded, the blood no longer undergoes that change from venous to arterial, which is of so much importance to keep up the functions of all parts of the body. The effect of the change is speedily felt by the brain: whenever the blood sent to it becomes of a dark colour instead of being scarlet, its function is at an end. In both cases we see that a certain change is produced in the living condition of the brain, which suspends its influence over the rest of the body, although there is no alteration in the structure that is ascertainable after death. When, therefore, we speak of diseases being functional, we merely mean to express that they are not accomplished by any change in the state of the organs that is ascertainable by dissection; and we use the word functional in contra-distinction to organic, which denotes visible changes in the organs of the body, ascertainable by dissection after death. That is the sense in which these terms are employed.

Now it must be observable, that the words functional and organic, as applied to diseases, are often used rather loosely, and by no means in the strict sense now mentioned. When the brain can be said, strictly speaking, to be under organic disease, it implies changes having taken place in the organ that can be detected after death. But such is not the sense in which the term is commonly employed by the modern writers of this country; in fact, they range in general, under organic influence, alterations of a temporary kind—for instance, that of inflammation. A serious change certainly takes place under the condition of inflammation; but the change is a transitory one, and may leave the organ in a state of uninterrupted action. Therefore the word organic does not generally comprehend this state, but is used to denote those more serious alterations in the structure of the body which are permanent—which do not admit of change—such as that which takes place in cancer, ossification, tubercles, and changes of that kind. The same looseness of language in this respect is observable in the writers of other countries: thus Richerand, in a popular work called Nosographie Chirurgicale, which has been published in France, divides the diseases of all parts of the body into three classes—physical injuries, 1. *Derangemens physiques*—organic changes, 2. *Alterations organiques*—vital changes, 3. *Lésions vitales*. Now, under the latter head, he includes inflammation. The difference between functional and organic diseases has sometimes been marked in our own language by the terms disorder and disease; but this use of these two terms is neither sanctioned by their common acceptation, nor indeed by their etymological signification, for in all common language disorder and disease are synonimous—they are used without any distinction, and if we come to inquire what is their meaning, they seem to be nearly the same. What is disease? It is an interruption of ease—it is a change in the feeling. What is disorder? An interruption of order—it is an interruption of the regular execution of the functions of the body.

The examination which we make after death, is not a satisfactory criterion of the changes which may take place in the state of an organ during life. Certain changes of a very obvious kind, take place during life, and of which we can trace nothing after death. In the case of erysipelas, and in some other diseases of the skin, there is a very manifest determination of blood to the skin during life; considerable distention of all the blood-vessels of that part; considerable redness of it; but these appearances are lost after death. The redness in ophthalmia disappears in the same way. We are not, therefore, to conclude, because we can discern no change in the state of the part after death, that no change took place during life. We are not now considering whether a function can be diseased without a change in the state of the organs: our principal point is to ascertain whether there was a change in the living condition. The examination, therefore, after death, is an uncertain criterion, and is not decisive of the point in question.

Again; before we can determine that no change whatever has taken place in an organ, our examination after death must be very accurate, and it should be performed under the guidance of a full knowledge of the healthy, normal, or regular state of the parts; and without the person who examines has that knowledge, it is impossible to determine whether certain changes may not have taken place and been overlooked.

Thus we find, that in proportion as pathological investigation after death has been conducted with greater accuracy, the number of diseases, supposed to be functional, has been diminished. Fevers have been supposed to arise from the diseased functions of the brain, but the more accurate pathological inquirers of modern times have found out that a great many organs of the body are considerably and obviously diseased in the case of fevers. Thus, it is found, that this complaint, instead of being a functional disorder, belongs to organic diseases. To many affections of the head the same observation applies.

The division, then, of diseases into functional and organic, in the view we now take, must rather be regarded as a distinction in degree than in nature. In the case of diseases called functional, the changes are such as to leave only slight, or, in many instances, no traces of change after death at all; in the diseases called organic, the alterations in the natural conditions of the part are of a more considerable kind, and leave behind them visible appearances after dissolution.

I can by no means agree in opinion with those who regard functional diseases as affections of the vital properties, without any reference to the state of the organs. How can we suppose that the function of a part can be altered, when the organ remains in the healthy state? What would you think if you were told by a watchmaker that a watch was perfect in all its parts, but that its movement was affected? But if he should tell you, "I have looked over the watch very carefully; it does not go well; there must be something wrong, but I cannot discover where," then he would speak very rationally, and that is the situation medical men find themselves in, in cases of functional disease; they see irregularity, but do not discover what it depends on. In such a case they should conclude that the art is imperfect, or their own knowledge deficient; not that functions can be impaired while the organs are perfect.

Now this is not a point of mere speculative importance, but one of considerable practical use; for those who believe in vital, or functional disease, direct their means of treatment according to their views. Their object is to remedy the imperfection of those functions, to excite vital properties which appear defective in energy, and to rouse those parts to activity which seem to be dormant. Hence a treatment is instituted which is calculated to aggravate disease rather than to benefit the patient. Persons who entertain views of this kind, seeing a paralytic affection, observe the loss of power only. If a patient is unable to move the limbs of one side, they say the nervous power is defective, and it is necesssry to rouse it. Thus they treat the paralytic limbs by stimulants of all kinds, and they administer general stimuli. More accurate pathological research proves, in these cases, that disease exists in the head, and that it consists, perhaps, in increased determination of blood, in effusion of blood or serum, or in other changes that would be aggravated by this stimulative treatment. We have examples of a similar kind of erroneous treatment, proceeding on this erroneous theory, in affections of the eyes. When the nervous structure of the eye is affected, as those parts are so deeply seated as not to come under observation externally, we cannot actually see them, but know that the retina, or optic nerve, is diseased. The patient's sight is dim; he says it is weak, and that it wants to be strengthened. And medical men take up the same notion as the patient. They fancy that the powers of the nerve want exciting, and that it is necessary to use means to strengthen the vital properties of the patient.

They treat the patient with stimulatives, in order to raise this supposed deficiency of vital function, and all the while the affection of the nerve is one of an inflammatory character, which is either more or less chronic.

From the want of observation in the cases of fever has arisen the notion of delibility, or suppressed energy or diminished energy, of vital functions, and the stimulating treatment, as pursued in consequence of this view. The same may be said with respect to the functions of the chylopoietic viscera in indigestion, where all kinds of tonics and stimulants are poured into the stomach in order to raise what are supposed to be deficiencies in the vital energy of that part.

It has been contended also that the fluids cannot be altered in their properties, except through the medium of some change in the solids. Now the fate of the fluid part of the body, with reference to disease, has has been very singular. At one period the explanation of disease turned entirely on changes that were supposed to take place in the fluids; and, at a subsequent time, it has been asserted that they have nothing to do in the production of disease. At an early period, when anatomy and physiology were but little known, the fluids were supposed to be subject, in the living body, to putrefaction, fermentation, concoction, acidity, alkalescence, to become thick and thin, and so on. The means of treatment were directed with the view of remedying such alterations. When anatomy and physiology came to be investigated, and the changes that had taken place were observed after death, of course all these notions were at once put an end to, and from that time to the present the very term of humoral pathology, which includes this sort of explanation of diseases, has become a sort of by-word of contempt.

It has been considered, that the states of the fluids can give no assistance in the explanation of diseases. Probably this is going too far. You will consider, that all the new materials enter the body in a fluid state—that they are all taken up into the system through the blood. When you consider the various kinds and quantities that enter the blood in this way, I think you cannot help supposing, that there must be considerable variations both in the quantity and in the composition of the blood, and that you cannot help admitting, that these variations may have considerable influence on the organs. Only compare, for instance, an individual in a state of health, with a plethora person on the one side, with a scorbutic sailor or a chlorotic female, on the other, and I think you will at once admit, that there may be differences in the state of blood, which may explain the condition of disease. The secretions of the body probably depend, in a great measure, on the state of the secreting organs; but we cannot help observing that they must also depend, in part, on the nature of the matter on which the organ acts. When we see the various states of the urine, which we can trace to the variations in quantity, or kinds of food, we cannot help allowing, that the conditions of the fluids deserve consideration in estimating disease. We cannot help admitting, that though the doctrines, which constituted the humoral pathology were absurd, and, most of them, unfounded, this forms no ground for excluding from our consideration altogether, the state of the fluids. The investigation of the fluids is difficult. Animal chemistry has been cultivated, however, much of late years, and certain ingenious facts have been brought to light; yet, generally speaking, we cannot derive much practical insight into disease, or the means of removing it from the state of the fluids. This, however is no reason why we should not expect, in prosecution of further inquiries of this kind, to derive considerable assistance from them.

In conclusion, gentlemen, I may express to you my opinion, that if diseases were perfectly understood, we should be able, in each instance, to refer the altered functions to some change in an organ or organs; sonsequently, the changes in the functions would merely constitute signs or symptoms of disease. I have already intimated to you, that the state of medical knowledge is hitherto too imperfect for such a purpose. In many cases, and even in some of frequent occurrence, we are altogether unable to distinguish the organ disturbed. Thus, for example, in common fevers, the profession are by no means agreed as to the particular organ, which is the primary seat of disease.

In intermittent fevers, we are quite at a loss to assign the primary and essential seat of disease. What name should we give to *tetanus* on this principle?

In internal diseases particularly, the changes of functions often cannot be referred to any assignable affection of any particular part. We are consequently, obliged to name such diseases after their external and visible signs; being sensible, at the same time, that the names so given are applied rather to symptoms than to diseases. Diabetes, hæmaturia, &c., are examples. Dyspnœa, asthma, and indigestion, are analogous instances. If, in our present state of knowledge, we use these terms, to denote diseases; we must bear in mind that they only represent symptoms, and we must investigate the condition of the organs which give rise to those symptoms, in the hope of determining the precise seat and nature of disease. All organs in the human body may be primarily affected; that is, they may be affected by causes acting immediately upon them; and all organs may also be affected secondarily; that is, in consequence of disease previously existing in some other organ. If boiling water be poured upon the skin, inflammation of the skin is produced. If a wound be inflicted, we have the same result; these are primary affections of the skin. If a person take certain sorts of food, for instance, some kinds of shell-fish, or if he get his stomach disturbed in any other way, he may have an attack of nettle-rash, or urticaria, the skin being affected secondarily, through the medium of the stomach. If a person have a blow on the head, or if he employ his mind intently, he may get headach, or other disorder of the head. Again, he may get the same kind of symptoms if his stomach is overloaded, or his bowels are costive. The stomach may be disordered, and a person may become sick, in consequence of eating certain food. Again, serious injuries to the head will produce sickness, and these are primary and secondary diseases of the stomach.

Primary disease is also called *idiophatic*, and secondary, *sympathetic*. Idiophatic disease is an affection of any part produced by a cause acting immediately on that part. Secondary or sympathetic disease is excited by the existence of disorder in some other organ.

I fancy there will, or, at least, there ought to be, no difficulty in recognising that all organs may be primarily diseased, that each part may be disturbed in the execution of those functions which naturally belong to it. Thus the lungs, stomach, intestines, urinary organs, &c., may be affected through causes applied to them in the execution of their several offices; yet, when persons have attended much to some part, they have sometimes been disposed to refer all diseases to primary disturbance of such part. Thus, one has attached very great importance to diseases of the liver, and has fancied this organ to be the source of almost all disease; another has regarded the stomach and alimentary canal in the same light. This has been the case of late years, particularly in the metropolis of a neighbouring country, where a physician of great eminence has, I believe, held the opinion that almost all diseases of the body originate in the part of the frame before referred to, viz. the stomach and alimentary canal. Now I should regard all these views as partial and erroneous, and have no hesitation in believing that all parts may be originally diseased, and, of course, in admitting that all may be secondarily disordered. In proportion to the importance of an organ, will be the influence that it may have over others. No doubt, in this point of view, the parts that are concerned in the office of digestion,—

the stomach, alimentary canal, and various subsidiary organs, will have great influence in exciting disease in other parts, yet we must not look to them alone, as the primary seat of all disease. We find clearly that the brain, the centre of the nervous system, may be diseased, without a disease existing in those parts, by a cause that is applied solely to it. Intenseness of application, mental exertion and anxiety, and a variety of causes that are capable of acting on the brain alone, may disturb it, although the stomach and alimentary canal generally shall be in a healthy state.

In most diseases, you find symptoms referable to both these heads; that is, certain symptoms which arise immediately from the disturbed state of the organ, and others, which are owing to the sympathetic influence of that organ on other parts of the body. When we say that one part sympathizes with another, we merely denote the fact, that the affections are co-existing. What is the meaning of the word sympathy? It merely means suffering with. The physical is very similar to the moral sense of the term. If, in an affection of the head, the stomach is deranged, and we say the stomach sympathizes with the head, we merely express that the stomach suffers in conjunction with the head, or at the same time as the head: sympathy merely means that. When we see a person in a state of anxiety, or distress, or pain, or suffering, and we feel an unpleasant emotion ourselves, we sympathize or suffer with the individual;—in the same way one organ suffers with or sympathizes with another. In the animal economy the word merely denotes the circumstance that the affection of one organ takes place in conjunction with another. It does not explain the fact. When we come to inquire how this is produced, various explanations may be given, according to the various causes. With regard to nervous sympathy—the nerves are distributed over all parts of the body, and particularly the nerves in conjunction with those common centres to which I have before referred. The brain, and the spinal cord, afford easy means to understand how it is that various organs are combined together, in their morbid as well as in their natural functions. The sympathetic effects of one organ upon another differ materially under various circumstances. We find that the sympathetic effect is more powerful in proportion as the organ primarily affected is of greater importance in the animal economy; and the affection of the organ is of greater consequence in proportion as the individual in whom the affection takes place is more irritable, or of a more excitable system.

LECTURE III.

Nature and Classification of Diseases.

I ENDEAVOURED, gentlemen, in my last lecture, to give you a general notion of diseases:—I represented to you that they might be defined to be a deviation from the healthy or regular state of any solid or fluid of the body, or of any function; not, however, meaning thereby that the function could be disordered without a change in the condition of the organ that executed it.* With regard to the question, whether fluids could be altered without some change in the solid parts of the body, I considered it to be hitherto undecided. I spoke to you of the difference between organic and functional diseases, regarding the former as comprehending all those cases in which some recognisable change after death is observed in the organization of the part, and arranging under the latter those instances in which no such change can be ascertained, but in which, however, we cannot entertain a doubt that a change must have occurred in the living condition of the part, as we cannot suppose that the function can be altered without some change in the state of the organ which is the cause of that function. I mentioned to you that I could not admit the notion of functional diseases, considered as independent of the organs by which they are exercised, as it seemed to me to involve the idea of an effect without a cause; and I farther held this notion to be objectionable as leading to injurious practical consequences. This I attempted to illustrate from the views entertained respecting the nature of palsy, and the treatment adopted under the notion of that disease, consisting in a diminished or reduced state of the nervous power of the part. I alluded to some particulars in reference to the treatment of impaired vision; to the notion of debility in fevers, and to the idea of indigestion in affections of the stomach. I observed farther that I considered that all the organs of the body might be primarily diseased—that is, each organ may be disturbed by a cause which is applied to it in the execution of its peculiar functions; next, that all the organs may be secondarily diseased, that is, they may be diseased in consequence of derangement previously existing in some other part: these two kinds of disturbance being respectively called primary and secondary, idiopathic and sympathetic. I observed that the words sympathy and sympathetic did not explain how the phenomenon occurred, but that they merely pointed out the fact of the co-existence of certain affections; that one part suffers with, or at the same time as another—this is precisely the meaning of the word sympathy.

I come next to speak to you of the differences in the nature of diseases. We have to determine, not only what organ of the body is diseased in each case, but also how it is affected; and this is a part of the subject still involved in considerable obscurity.

Our notions of the ways in which organs are disturbed, are as yet imperfect. Probably there are some, of which we have, as yet, no idea.

In the great majority of cases, diseases consist in increased action of the parts, that is, they are inflammatory. We have, therefore, to consider, first, the original disturbance, or the inflammation; and, secondly, the more or less considerable, and the more or less durable change, which the inflammation, by its continuance and progress, is capable of producing in the structure of parts.

Now inflammations are not all of one kind, and there is one leading distinction between them which it is necessary to notice, even in this general view. Inflammations are divided into two sorts—common and specific. The common inflammation is that produced by ordinary causes of disease, acting on healthy constitutions. A wound, for instance, inflicted on a person in good health, may cause common inflammation. Specific inflammations are those in which the constitution of the patient is unhealthy; the deviation from the state of health being either hereditary or acquired; and examples of this occur in scrofula, gout, and rheumatism: or there are inflammations produced by one definite and specific cause, and by no other; as in the case of syphilis, small-pox, measles, scarlet fever, and the contagions generally. Specific diseases, then, are specific, or peculiar, either in consequence of peculiarity in the individual in whom they occur, or in the nature of the causes that produce them. You will understand, that the inflammation thus excited is nearly similar to that produced by common causes; at least it is only a difference in modification, and frequently the specific inflammation is so much like the common, that a difficulty is experienced in distiuguishing the one from the other, Often we cannot distinguish, by the appearances, between a syphilitic bubo, and a common inflammation of the glands in the groins.

Having heard then, that diseases generally consist in a state of increased action, you will naturally inquire whether there is not another class that arises from the opposite cause—diminished or reduced action? And you will probably have heard so frequently of debility; you will so frequently have read of it, and of means being adopted to remedy it, that you will probably expect a considerable class of disease to be of this character. I believe we can hardly say any thing satisfactory about debility, considered as the cause of disease of parts. It is true that debility is very frequently met with as the consequence of disease. The alterations produced by disease in a part, render it more or less unable to carry on its function, and it is said to be weakened. Disease occurring in the body generally, will often so affect the whole frame, as to induce a state of weakness. But what I mean to say is, that we very seldom, if at all, recognise debility in a part, as the cause of disease in that part, in the same way that we see excitement producing inflammation. It is true, that if cold be applied for a considerable time to a part, it will reduce, and at last entirely destroy, the action of such part. Ossification of the arteries in the extremities of old persons, seems in a somewhat similar way to give rise to a peculiar kind of inflammation, and frequently to mortification. But the debility which we so frequently talk of and read of is to be regarded as the effect of disease; and therefore it cannot be laid down as a general cause of disease. In considering the nature of diseases, debility is contradistinguished to increased action.

Many diseases produce a complete change in the organization of parts which they affect; these are called organic changes. In many instances, they convert an organ into a structure quite of a new kind; and in the morbid growth thus produced, you will see, perhaps, no trace of the original composition of the organ. Examples of this kind occur in cases of cancer, fungus hæmatodes, tumours, encysted, and other tubercles in the viscera; the tuberculated state which takes place in the lungs, for example, in phthisis pulmonalis. It often happens, that the phenomena of those organic changes are assimilated in a great measure to inflammation; that is, there will be increased action in the part, distention of the vessels, more or less of the characters observed in inflammation; but this is by no means general, and frequently those changes take place in a very slow manner, and without any of the obvious characters of inflammation. In the case of tuberculated phthisis, the tubercles are often deposited, and proceed to affect a great part of the lung with very few sensible symptoms.

The next general head is what we have already referred to—functional derangement. That is a kind of division which we merely take in consequence of our ignorance respecting the nature of many of these diseases. We see the function of a part deranged, and we lay it down as a head of disease, without understanding exactly what is the cause of the derangement. I believe you will find, if you take any particular organ, and put together all you can say respecting it under the several heads I have now mentioned, that you will nearly exhaust the subject of its diseases. Suppose we take the eye, and consider the physical injuries and wounds that may be inflicted on it; secondly, the inflammation that may arise, divided into common and specific; thirdly, the consequences; fourthly, the organic changes; and, fifthly, the functional derangement; we shall find there is hardly any thing that is not referable to these heads. However, we may, perhaps, find something that does not strictly come under these, and therefore we must constitute another division to include what is not referable to any of the preceding; this will form a collection of sundries. In the eye, cataract would be referred to such division. It is better to adopt this course; because, in doing so, we do not go beyond our knowledge; and when we look to matters referred to this division, we see in what we are ignorant, and point them out as subjects of future investigation. I think it is better not to pretend to be informed upon a subject of which we have no knowledge. When we do not understand the nature of a disease, it is better to acknowledge the fact at once, and leave it for further investigation, rather than to take up an imaginary and theoretical opinion, and suppose that it accounts for appearances of which we are, in fact, ignorant. The matters thus arranged are designated as subject for future inquiry.

When we are acquainted with the seat and nature of a disease, we are enabled to give it a clear and expressive name, which will at once denote it. There are many diseases that are named in this way—thus cephalitis, iritis, gastritis, nephritis: these denote inflammation of the respective parts, the termination *itis* being chosen to designate the state of the organ, and the former part of the word the organ itself. These names indicate the particular kind of disease, gastritis—inflammation of the stomach, and all such names, expressing both the seat and the nature of the derangement.

In a great many instances, our knowledge is too imperfect to admit of diseases being named in this way, and then they come to be named by some leading feature. Thus we have diarrhœa, dysentery, and colic. Frequently diseases are named from the pains accompanying them; as cephalalgia (headach); gastrodynia, guttrodynia, pleurodynia, &c.; or from a preternatural discharge of fluid, as hæmoptysis—spitting of blood;

diabetes—increased flow of urine, &c. All these pass in nosologies as so many diseases; but you will see that they are merely names given to symptoms of disease. Such names are to be considered as indications of our ignorance. If we knew in each case which organ was diseased, we should, of course, adopt a name that would indicate the organ; but being ignorant of that, we apply names in those cases to some particular leading symptoms.

We come next, gentlemen, to consider the subject of the arrangement or classification of diseases; and this, in a subject so extensive and complicated as medicine, is a matter of very considerable consequence. I need not observe to you, that in any subject in which a great number of parts are to be considered, a methodical distribution of those parts very much lessens the labour both of the learner and the teacher. If a person should take up the subject of disease, and enter upon it without any arrangement, the multitude and varieties of disease would seem to overpower him, and he would feel himself in a kind of labyrinth, without any sort of clue. The number of diseases is very great; and if you were to regard only the number, you might think it a hopeless attempt to endeavour to investigate so great a variety. The individual organs of the body are very numerous. Each of those organs is liable to be affected in various ways; and every affection of each organ has its name, and is to be considered as a disease. Not only are all the organs of the body to be considered in this way, but in a great many instances a particular organ is very complicated, consisting of a great many component parts; each of those is liable to derangement, and all those various derangements have received names, and appear in nosologies as diseases. Take the case of the eye—I believe, in consequence of its being open to external observation, and its structure being very complex, there are not less than two hundred diseases enumerated by nosologists as affecting this organ. You will not therefore be surprised, when the diseases of the whole body are enumerated, that they come to be reckoned up by hundreds or thousands.

The study of disease, however, is not such a complicated and endless subject as this view of the simple catalogue of names would lead you to expect. I mentioned to you, in the Introductory Lecture, that though the individual organs are numerous, the textures by which they are built up are few. In fact, the ground-work of nearly all the organs consists of the cellular system, the vascular system, absorbents, and nerves. It is the various proportions in which they are combined, and the admixture with them of some structures which are less general, that make up the differences in the various organs. Hence, as the essential basis of structure is the same throughout, so all the morbid affections must be somewhat similar, because each part can only exhibit those diseases which the elementary parts are capable of exhibiting. It is true that disease differs in the various organs of the body, but the differences are in form; the essential nature of disease is nearly the same throughout.

That part of the science of medicine which considers names, and the distribution of diseases into classes, is technically called nosology. Diseases have sometimes been considered topographically, that is, according to their situation in the body; and the older writers have treated them in this way, beginning with the diseases of the head, and descending to those of the extremities. This, at all events, does not involve any technical ground of confusion—does not lead to error; it leads, however, to tediousness, because the various parts of the body are liable to similar affections, and if you describe them as they appear in each part, you must go over the ground again and again. An abscess is the same whether it is formed in the head, the chest, or the limbs; and the same remark will apply to other affections.

Modern nosologists have generally attempted to ground their arrangements of disease on their views of its nature. Their efforts have been, in general, very unsuccessful, because the nature of disease, as I have already pointed out, is imperfectly known. Most of these nosologists have been but imperfectly acquainted with anatomy and physiology, and therefore their distinctions, so far as they go, have in most instances been fanciful, and have been founded on particular doctrines and symptoms, which will not bear examination; and, consequently, most of these persons, instead of rendering the subject clearer, will be found to have introduced mere names, which have left it more obscure. Great advantage has been derived in the study of natural history from methodical arrangement. A very great man, Linnæus of Sweden, who lived in the last century, employed himself in arranging natural objects according to their natural affinities. The success which attended his efforts led to the adoption of the same kind of method in the arrangement of diseases. A nosology was published by a French physician, (Sauvages) in which diseases were arranged in species and genera, and were combined in orders and classes, much in the same way that Linnæus arranged plants and animals, and other productions of nature. This arrangement of diseases by Sauvages included 10 classes, about 300 genera, and above 4,000 species. The example of Sauvages was followed by others; but I need not particularly examine their nosologies, for they are now deservedly forgotten. Professor Cullen, of Edinburgh, published a system of nosology, which has been generally adopted in this country, and which has been considered one of the best. Yet you will find, upon examining it, that diseases are there brought together which have no natural affinity, and that others are separated and put into different classes which resemble each other; so that, if Cullen's nosology be the best that exists, all I can say is, that bad is the best. Under the head of Cachexiæ, which is one of his classes, and which he defines to bo depraved habit of body, he has the order intumescentiæ, or swelling; in which he has brought together polysarcia, excessive fatness; pneumatosis, distention of the chest with air; tympanites, distention of the intestines; ascites, dropsy of the belly; hydrocele, distention of the scrotum with water! His other arrangements are equally unfortunate; so that if we regard this as one of the best examples of nosological arrangement, we may safely dismiss them all; indeed, I conceive, the little taste that now exists for such schemes, to be a favourable sign of more rational views on the subject.

It is vain to attempt arranging disease on the same principles that have been followed in classifying the productions of nature, because the two cases are by no means analogous. The species of natural objects are distinctly marked out by the hand of nature, and there can be no difficulty in placing them together. No one can confound the dog, the cat, the sheep, the cow, the lion, and so forth; but when we come to examine into what are called the species of disease, we find that, instead of being defined, like these species of natural objects, they run into each other by insensible gradations, so that it is extremely difficult to point out distinctions between them. When we come to examine disease, we find it presenting itself in forms not described in books; and it is very common to observe, that the diseases we meet with are not like those that we have read of; thus the primary grounds of division are wanting. Then if we come to the division of genera, orders, and classes, the structure and economy of animals is well known, and hence leading circumstances can be adopted as the ground of separate division in their natural history. For example, a certain description of animal feeds on vegetables, and nutrition is conducted on a plan called ruminating, or chewing the cud;—another class feed on animal food, and they pursue a very different mode. Thus you have two natural classes in animals; those called ruminating, that chew the cud, and the carniverous, or those that feed on their prey: and in reference to the economy of animals, the plan of their structure is arranged accordingly. You know, therefore, when you hear that the animal is referred to either of these classes, almost all the leading circumstances about its economy even before you are acquainted with the animal itself. If we could construct classes of diseases, founded on such obvious and well-established characters, it would very much facilitate the business of the student. But when we come to look at the arrangement of Cullen —suppose we take his Tumores, what do we find?—aneurisms, ecchymosis, varix, tumours of all kinds, scirrhus, cancers, bubos, warts, corns, exostosis, swellings of the joints, hydatids, &c.; and, in fact, his definition of tumours, "swelling of a part without any inflammation," would include a pregnant uterus! What has he under the head Dyalyses, that is, the separation of parts? Under that we find wounds, fractures, ulcers, caries, herpes, tinea, psora, or the itch! These are only examples of such arrangement as composes the whole of this celebrated nosology; and yet, I believe, that in some institutions, students are not eligible to be examined, touching their other qualifications, before they have been questioned as to their knowledge of Cullen's nosology! Thus, it is required that a person should have his mind filled up with trash and rubbish. If real knowledge of disease can be communicated, it is all very well; but, if not, I think it much better to leave the mind empty than to fill it with stuff of this kind.

Now as diseases, for the most part, consist of changes of the state of organs of the body, the proper ground of division would be anatomical; at all events that would be a ground of distinction that would not involve any error. There are two ways of proceeding; there is the anatomy of form and position, and that of texture. The former is called descriptive, the latter general, anatomy. The latter shows the composition of organs, applying a kind of analysis to the parts, reducing them into their constituent elements. This part of the science was almost created by Bichat, a man of great genius and singular industry, who died at the early age of 33, and yet has left behind him a name that will live as long as the science of medicine shall be cultivated. In his work called Anatomie Generale, he has explained this anatomy of structure. He has, as far as it could be done, reduced the organs of the body to their original elements. He has determined their nature, and shown the proportions in which they enter into the different parts of the body.

If we knew enough of the elementary or original organic structure of which the body is composed, we could then put down under that head all the various disturbances of each system, and thus we should have a natural arrangement of the diseases of the part—an arrangement grounded on anatomy. In considering disease in this way, we should find that a great deal of time would be saved, because when we have explained, generally, the nature of affections that are incidental to each tissue, we should only have, in particular cases, to point out the local circumstances which belong to affections in those parts. Suppose we take the cellular system, for example; inflammation of the cellular system is called phlegmon; that inflammation proceeding to suppuration, constitutes abscess. When the phenomena of phlegmonous inflammation and suppuration have been once described generally, we need not repeat their description in going over all the various parts of the body; we should only have to notice in particular instances any local peculiarity. The same with respect to serous membrane, mucous membrane, and all the other tissues. But it will be found convenient in describing disease, in some parts, to depart a little from this system, because it will contribute considerably to understanding clearly the various affections of a complicated organ to bring them under view at the same time. Thus, for example, it will be well to consider the diseases of the eye together, the diseases of the urinary organs, and so forth. This arrangement, then, I mean to adopt; considering, for the most part, diseases as they occur in the various elementary structures, but, in some instances, taking up the diseases as they are seated in particular organs.

Although diseases are spoken of under single names, and are therefore regarded as single objects, you will find that each particular disease embraces a great variety of circumstances; and in order to understand it thoroughly, you must view it in different lights. In the first place, you survey those circumstances which denote the existence of disease, and which may be called, generally, its external signs. You would direct your attention, in the first place, to the circumstances under which the disease has arisen, and you would investigate the occurrences that have taken place in the particular instance, previously to the time at which you saw the patient; that is, you would inquire into the history of the complaint. You would next proceed to notice those changes in the state of the affected organ, which produce any alteration recognisable by the senses; those you can generally ascertain completely in external parts; and, in some instances, in internal organs, changes are produced, recognisable externally. You observe the changes in the functions of the part. You also observe the changes which may be produced either in other organs or functions secondarily. These various circumstances are called the symptoms of disease. The word symptom is of Greek extraction, and it means happening with, occurring together; therefore a symptom of disease must be something which you actually see or notice at the time of your examining a case. The phrase "signs of disease," is more comprehensive, for that will embrace all which has occurred prior to the time of examination.

Now you will observe that symptoms in this way are divided into the primary,—those changes which take place in the part itself; and the secondary, or those which occur in the condition of other organs. Increased redness, swelling, and a yellow discharge, are the primary symptoms of a clap. Increased frequency of making water, and swelling of the testicles, are secondary symptoms of the same disorder.

In looking to the symptoms of disease, particular attention has been paid to such as constantly take place; and those have been called *pathognomonic* symptoms; the meaning of which is, a something pointing out the nature of the disease. Secondary symptoms cannot be called pathognomonic; because an organ may be secondarily affected in one case, and not in another. And even with respect to the symptoms that belong to the organ immediately affected, you do not always find them the same. One or another symptom may be sometimes present, and sometimes wanting; so that there are very few appearances which are fit to come under the description of pathognomonic symptoms, and those are mostly found in cases of external diseases, and are referable particularly to what we ascertain by surgical examination. Thus, for example, if a patient have a pain in making water, if the stream be occasionally interrupted, if the urine be loaded with mucus, if the patient feel pain from the motion of a carriage, we suspect he has got a stone in the bladder; but all these symptoms exist sometimes without there being a stone in the bladder. If, however, you introduce a metallic instrument into the bladder in such a case, and strike against a hard substance, and hear the sound produced, then that is a pathognomonic symptom of stone in the bladder.

Symptoms have also been divided into *local* and into *general*. Local symptoms are those existing in a part; general symptoms are those changes affected in several parts of the economy, hence called general, from taking place in conjunction with several primary affections. Thus the collection of symptoms constituting fever, may occur in conjunction with any local inflammation, or with an injury; therefore they do not point out in particular the nature of any disease.

We next come, in the investigation of disease, to look to the circumstances by which disease has been produced; that is, to the examination of causes, which is, as you will readily conceive, a very important point of the inquiry. Some causes act immediately in producing changes in the state of our organs, and they are called direct, immediate, or exciting causes. Thus the application of hot water to the skin produces inflammation and vesication of the skin. But other causes produce a state of the body in which disease is likely to occur, without actually causing disease itself; these are called remote or predisposing causes. Thus a full state of habit produced by indulgence in eating and drinking, is a predisposing cause to apoplexy or palsy. You will read much about what is called the proximate cause. Proximate, from *proximus*, means that which is the nearest; that cause which has immediately preceded; the nearest cause in producing the disease. Now you will observe, that disease is sometimes traced to an altered condition of a certain organ, and when our knowledge is complete, we can do that. Therefore, the proximate cause is the circumstance that has produced the altered state of the organ. In other cases, where our knowledge is imperfect, the disease is merely an assemblage of symptoms, and in such cases the altered condition of the organ, when it is found out, is considered to be the proximate cause of those symptoms. This is the sense in which the word is used by Dr. Cullen: his ideas turn on the symptoms that are exhibited in each case, and not on the changes that are to be observed in the organ. The proximate cause, therefore, of Cullen, and others, who use the term in the same sense, is what we should call the disease itself.

Now these distinctions, perhaps, will be best understood by stating a case to you. A certain individual is of a sanguine temperament. He has a short neck, a full habit of body, produced by habitual indulgence in eating and drinking; that person takes a very hearty dinner or supper, fills the stomach with food, and takes a considerable quantity of drink. Shortly afterwards, he falls back in the chair, loses sensation and voluntary motion, and has, in short, an attack of apoplexy. He either dies almost immediately, or without recovering his senses or voluntary motion, the internal movements of the body are carried on one, two, or three days, and then he dies. On an examination of the body, you will find, perhaps, a considerable effusion of blood into the substance of the brain. Now in this case, if you regard the loss of sensation and voluntary motion as the disease, apoplexy, the pressure on the brain, by the effused blood, is the proximate cause. If, however, you regard these circumstances merely as symptoms, then the effusion of blood into the brain is the disease itself, and the proximate cause will be the excitement of the circulation produced by the hearty meal. The hearty meal of which such an individual has partaken, would be called, by nosologists, the occasional cause of the disease: the sanguine temperament, the short neck, and the fulness of habit, are predisposing or remote causes. Thus you observe, that investigating the mode in which disease is produced, you often have got a train of changes to observe, each of which, considered in reference to that which goes before, and that which follows, is successively, effect and cause.

Having, then, observed the history of the disease, having noticed the existing symptoms, having traced the cause, having watched the course and duration of the disease and its termination, we complete our investigation of the subject by examining the body of the patient after death, in case death should occur. This leads us to find out the changes which have been produced in the state of the part immediately affected, or of other parts connected with it; and by this we ascertain what we may call the pathological condition of every part. The knowledge we thus acquire, is of great importance towards enabling us to determine the seat and nature of disease. It is this inquiry after death, into the changes that take place in organs, that has so materially contributed to give us more just notions of disease. It is this which has dispelled all those notions by which disease was attributed to certain alterations of the fluids, or to certain vital properties; for it has shown us, in those cases, the material changes in the organs that have been produced by such diseases. This examination completes the history of disease. In many cases we do not find a change produced in the organ, but even this negative circumstance is of use in detecting error.

Now, important as this examination is, and valuable as the information is that it imparts to us, you must not consider that it is a matter of the first importance in investigating the history of disease. The point of chief consequence is, clinical observation during life; that is, the ascertaining of all the changes which take place in the state of an organ, or the condition of its functions during life. The examination after death completes the history of the case, but that is of subordinate consequence in comparison with clinical observations during life. By the mere observation of diseases during life, we can understand a great deal of their history, origin, causes, progress, and termination, without examining bodies at all. The examination of bodies after disease, in many instances, cannot be performed, because the patients do not die. In many instances, we are not allowed to examine them; in several instances, we detect no change. Therefore, you will observe, that the cases are, comparatively, few in which direct information is afforded; and though, in those cases, the information is of a very important kind, the general doctrines of treatment have been derived from experience during life, and not from the observation of any facts after death. When we examine the symptoms of disease, and pay particular attention to those changes produced in the affected parts—to the primary or local changes, we are led to distinguish one disease from others which might resemble it; we are led to distinguish the disease of a particular organ from diseases of contiguous organs. That is, we make the distinction—we establish what is technically called the diagnosis between the particular disease, and any others that may, in point of nature or situation, bear a great affinity to it. This part of the inquiry, is called diagnosis, and the particular signs or symptoms we dwell on, in making our distinctions, are called the diagnostic signs.

When you are called to a case, you will find the patient and his friends extremely anxious about his situation. They will wish to know whether he will recover or die; whether he will recover completely, or partially; how long the disease will last; how soon he will be able to resume his usual occupation, and so forth. These inquiries are very natural, and though you may find them troublesome in some instances, I should hope you will be inclined always to answer them with kindness' and patience. You must make allowances for the anxiety of friends, and you must not allow yourselves to be betrayed into any thing like hastiness or ill temper under such circumstances. This is a point which is one of policy, as well as of good feeling. Few persons can properly estimate professional skill, but all are able to appreciate kindness and attention.

When you compare the state of a patient under your immediate observation, with all you know from other quarters respecting the nature, progress, and effects of disease and treatment in particular cases, you are able to prognosticate or predict the course and event of the disease, in the case under consideration; and that, considered as a division of pathology, is called *prognosis*.

Then, having surveyed the case in this way, you are naturally led to the means by which diseases may be arrested, or safely conducted to their termination. Those means fall under three divisions, which I have already alluded to; viz. the management of those external influences which contribute to the restoration of health; such as diet, air, exercise, clothing, sleeping, and walking, which heretofore have been called by the strange name of *non-naturals;* the application of pharmaceutical means; and chirurgical means, operations, or other manual proceedings. So that you will observe that surgery, strictly speaking, is a part of therapeutics, or the treatment of disease.

Now the various views of disease I have just mentioned, taken altogether, constitute the science of pathology; and the investigation of disease is not complete, until you have surveyed it under all these various aspects; although these are various, they all have a mutual bearing on each other; and your views would be very imperfect, unless you surveyed the whole of them.

It has sometimes happened that disease has been considered in one or other of these views only, and particular treatises have been written upon them. You are not to consider, however, that because such partial views of the subjeet have been treated of under particular names, that they constitute separate sciences. We have had the consideration of nomenclature and arrangement, which constitute nosology; the consideration of symptoms—symptomology; the consideration of causes—etiology, &c.; and there have been treatises on the art of diagnosis. I cannot approve of any of these partial views of disease. It is so necessary to contemplate the subject altogether, and the various parts elucidate each other so materially, that we ought not to attempt to take any particular view, but to consider the whole in conjunction.

I have mentioned to you an observation made respecting the nature of diseases—namely, that in a great majority of cases it consisted in inflammation. In point of fact, in giving a course of medical or surgical lectures, we are principally occupied in describing inflammation, and pointing out the mode of treating it. I therefore think that we should begin with this important subject. I have mentioned to you, that the arrangement of diseases I shall adopt will be founded on the different component tissues of the body; but I think it necessary, first, to describe inflammation and treatment as connected with it. It is of particular importance, in a surgical course, in which we have to describe the nature of injuries, and their effects; for these are only modifications of inflammation. You will find that in doing this we shall save both time and trouble. In the subsequent portions of the course we shall have occasion, in describing the tissues, to advert to the general principles laid down on this part of the subject;—I shall, therefore, in my next lecture, call your attention to—INFLAMMATION. It is, however, so necessary to view the whole of the parts together, that we should not attempt to take any of them alone.

LECTURE IV.

Inflammation.

The causes of disease, gentlemen, however various they may appear to be in the great majority of instances, augment the living actions of the parts in which they occur. They are said to stimulate, to excite, to irritate, to inflame. All injuries, and all external irritations, produce inflammation, and a great variety of internal causes, which in many cases we cannot exactly ascertain, or satisfactorily appreciate, produce the same result. Inflammations, again, occur in certain cases (if we may use such an expression) sympathetically: they seem to be effects or symptoms of a general disorder existing in the frame. Of all the various diseases which constitute the catalogues of our nosologists, by far the greater part consist either of inflammation in particular organs, or of changes which are produced by it; and there are very few instances indeed in which inflammation in some part is not either a cause or consequence of disease, a concomitant circumstance, or a mode of cure. When I say mode of cure, I allude to the production of inflammation artificially as the means of remedying disease. This is a circumstance peculiar to inflammation, and not belonging to any other morbid affection. We have the power, by various applications to the body, of exciting inflammation, which is exactly similar to that which arises from causes occurring within the frame. We cannot, however, in the same way, produce organic changes, such as cancer, fungus hæmatodes, exostosis.

Of what are called general affections of the frame, there are very few cases in which there is not inflammation of some particular organ, and in which that inflammation is not either the cause of the affection, or a concomitant circumstance. I believe we shall hardly meet with any cases of common fever in which we shall not find this exemplified; and even in intermittent fever it is by no means uncommon. Therefore, a course of lectures, whether medical or surgical, should be principally occupied in describing inflammation, in pointing out the effects which it produces in the several organs and textures of the body, in showing the various forms under which it appears, in investigating its causes, explaining its varieties, and exhibiting the means by which it may be controlled, arrested, or removed. With this extensive and important subject I therefore begin, because a general description of inflammation at first, will save a great deal of time, and we shall be able to refer with advantage to that description, in considering the affections of the various organs and textures in detail.

Inflammation has generally been spoken of and described in the abstract; but there are such numerous varieties of the process dependant on the differences in the structure of the affected organ, and on the nature and cause of the disease, that any general description cannot be applicable. In order, therefore, to give you a general notion of the kind of disturbance which is produced by inflammation, I shall select a particular instance, point out the phenomena which appear there, and exhibit that as a type of this kind of affection. We shall take, then, the case of inflammation of the hand, produced by a wound, puncture, laceration, or any other injury of the finger or palm. The individual who has received this injury, probably, continues his ordinary occupations. He finds the parts becoming rather painful, but for the moment disregards this, and goes on to use the hand. The inconvenience increases, the part begins to swell, and soon he finds himself unable to use it without great pain, which induces him to seek medical assistance. When you see a case under such circumstances, you will find that the inflammatory attack is already pretty fully developed, and you will observe it characterised by four circumstances; that is, the part is preternaturally red, swelled, hot, and painful. The swelling affects the whole of the hand, but it does not present the same characters throughout. In the immediate situation of the wound, supposing that to be in one finger, or in the palm of the hand, you will find the swelling is tense and firm. If the affection has extended from the hand to the fore-arm, the tumefaction will be of a firm character, particularly about the wrist; but if you examine the back of the hand and fore-arm generally, you probably find that the swelling is soft, and what we term œdematous; you observe also that the swelling is more extended than the redness. The redness is of a bright scarlet, or light crimson tint. It is that kind of colour which we may suppose to be produced by the presence of an increased quantity of arterial blood in the part. It does not exhibit any thing like what would be produced by an increase of venous blood. The redness is most intense in the immediate neighbourhood of the injury, and from that it is gradually shaded off towards the sound parts. The increased heat is sensibly apparent to the touch. If we apply the hand, we can at once perceive that the inflamed spot is warmer than the neighbouring parts. The patient, too, feels an intense burning in the seat of disease. If, however, we come to examine the temperature of the part by the thermometer, we do not find there is such an increase of heat as the sensation afforded to the patient would lead us to expect. We do not find the temperature of the inflamed part to ascend beyond the natural temperature of the blood, and that has been ascertained to be from 98° to 100° by Fahrenheit's thermometer. This is a point which has been particularly investigated by Mr. Hunter. He excited inflammation in the cavity of the chest, in the vagina and rectum of animals; and he found that the temperature of those parts never rose under the intensity of any inflammation he could excite beyond the natural temperature of the blood. If you place a blister on the skin of the chest, and afterwards examine the temperature of the part from which the cuticle has been removed, you will find the thermometer will probably rise about two degrees beyond the temperature of the surrounding skin. If you make the same experiment on the extremeties, you will find that the difference of temperature will probably be four, five, or six degrees, because the temperature of the extremeties is naturally lower than that of the parts near to the centre of the circulation, and the application of the blister there raises the temperature more, so that it may bring it as near to the natural heat of the blood. In one instance, when Mr. Hunter was operating in a case of hydrocele, after he had made an incision through the tunica vaginalis, he introduced the bulb of a thermometer, and found the temperature to be 92°; in the following day he ascertained it had risen to 93¾°, which was a very considerable advance, but yet that did not go beyond the natural temperature of the blood in the individual.

The pain in the part is, in the first instance, slight, and gradually increases. It is augmented on pressure, and increased by any attempts to use the part. At first the patient experiences something of a dull aching pain; but as the inflammation proceeds, that feeling assumes a peculiar character, and is attended with a throbbing or pulsatory sensation. The patient seems to perceive an increased exertion in the arteries. This is not merely a circumstance adverted to by the sensation of the patient; for if we place our fingers on the arteries we find there is a very considerable augmentation in the force of the pulsation in the neighbourhood of the diseased part. In the case of the hand, the pulse at the wrist, on the inflamed side, is much fuller, stronger, and harder, than the pulse in the opposite wrist. In fact, if the inflammation be considerable, you will find there is a very marked difference in the pulse of the two limbs. This throbbing extends along the arteries throughout the fore-arm, as far as the bend of the elbow. In conjunction with this increased action of the principal arterial trunks that lead to the inflamed part, you will find a corresponding distention in the veins, which convey the blood away from it. In the case of the hand, if you uncover the limb, you will see the veins are manifestly distended. They are often as full as you will find them to be, after having placed a ligature above the elbow, before you perform venesection.

In conjunction with these four remarkable alterations in the part already mentioned, the function of the inflamed organ is suspended, or, at least, considerably impaired; that is, the patient either cannot move the limb without great pain, and then but very imperfectly; or, when the inflammation has proceeded to a certain extent, he is totally incapable of moving it. Supposing the inflammation continues, and that its progress is increased instead of being checked, as the nature of such disturbance is, unless means are adopted to arrest it, you will then find other diseases take place in the part, and that those are of a very serious and important kind.

All the symptoms I have now mentioned, increase in intensity. The part becomes greatly swollen; the redness augments, most severe and agonising pain is experienced, so as to prevent the patient from resting, and then various effects are produced in different instances. The local increase of action is carried to such an extent occasionally, that the part can no longer sustain it; it loses its vitality, and mortification ensues. A certain portion of the skin assumes a dirty brownish or blackish colour, indicating that it is dead; that mortification or gangrene has taken place, and the part thus deprived of its vitality, is technically called a slough. Under a less violent degree of inflammation, matter forms; that is, a thickish yellow, or whitish fluid, known by the name of pus, is poured out by the inflamed vessels in the substance of the part, being deposited in one spot, where we find a cavity filled with it, constituting an abscess. This is technically known by the term suppuration. Or, without proceeding to either of these states, the swelling of the part may diminish, the pain and redness slowly lessen, the symptoms and effect of inflammation gradually disappear, the natural state returns by degrees, and the power of executing the natural function be restored, In other words, the symptoms of inflammation slowly subside, the part slowly recovers, and this is called resolution. Uuder certain circumstances, that is, in some kinds of inflammation, not in such a case as I have been considering, the symptoms will suddenly, and almost immediately, disappear. This sudden disappearance, by the French nosologists, has been designated by the term delitescence. This is derived from the Latin word *delitesco*, which means, to be concealed or hidden. In fact, it is equivalent to sudden disappearance of the symptoms. In the one case there has been the swelling in the texture of the part, and very slow removal of that swelling, occupying a considerable time; in the other, the removal is almost instantaneous; so that, I think, there is a propriety in distinguishing these two terminations; namely, the sudden disappearance of the swelling, the delitescence of the French, and the slow removal or resolution. In cases in which mortification may have occurred, or suppuration have taken place, you will find in the neighbourhood of the mortified or suppurated part, that there is considerable hardness or swelling, which is caused by an interstical deposition of coagulable lymph around the part. After the process which the occurrence of suppuration renders necessary, is gone through, and indeed without this process, wherever thickening or induration does not subside when the inflammation has passed away, there remains a state of parts which, although not distinguished in our language by any particular term, has been alluded to by the French, under the name of *engorgement*. This hardness of the part, which is produced by the interstical deposition, disappears again, in general, as the inflammation declines; but, in many instances, the function of the part may be seriously injured by it, although the inflammation has not proceeded so far as to cause the more serious changes of mortification and suppuration.

Inflammation, then, is said to terminate in mortification, suppuration, interstitial deposition, resolution, or sudden disappearance. But this is not very accurate, because, in point of fact, inflammation does not terminate with these occurrences. If mortification take place, or if an abcess form, the inflammation is not at an end. The symptoms are relieved, the swelling is diminished, and the pain lessened, but the redness continues more or less; the pain is not entirely removed, and it will be a long time before the part returns to its natural state. You can by no means say the inflammation has terminated, when these changes take place; they are parts of the inflammatory process, and not the conclusion or ending of that process.

Such then are the effects which inflammation produces in the part which is its immediate seat, and these are the primary or local effects of the increased action. But we find, at the same time, that there are other effects produced belonging to the head of secondary or sympathetic disturbances, effects which, as they embrace a considerable number of organs, have sometimes been called constitutional symptoms of inflammation.

We find, in the first place, that the vascular system is sympathetically disturbed, that the action of the heart is affected, the pulse is full, strong, and frequent; the nervous system is affected; there is pain of the head, back, and limbs; restlessness, want of sleep, and, in some cases, even delirium at night; the digestive organs are obviously and considerably disturbed; the tongue is white; there is thirst, costiveness, want of appetite, and sometimes even nausea and sickness; the various secretions are suspended, or, at least, much diminished in quantity; the skin is hot and dry; the mouth is parched; the urine is scanty, high-coloured, and turbid, and, in all probability, the secretions from the mucous membrane of the alimentary canal, generally are, in a great measure, diminished.

These various circumstances, taken together, constitute the state of sympathetic inflammatory fever; that is, febrile disturbance, produced by local affections. The sympathetic disorder gradually declines, in proportion as the original local mischief becomes lessened. When this takes place, the secretions that have been previously suspended are restored; the circulation, which is relieved by these natural outlets, becomes tranquil; the nervous system is soothed, and appetite returns.

Such are the several phenomena, local and general, of a well-marked attack of inflammation, and you see there is a correspondence of character between the two.

We next come to inquire how the changes I have mentioned to you in the part affected, can be explained. It is very apparent, from the circumstances I have gone over, that there is an increased quantity of blood sent to the inflamed part, and that there is a greater quantity than natural circulating through it. The increased action, or throbbing, of the large arteries, the visible distention of the great venous trunks, the fulness of the small vessels, which is shown by general redness of the part, and the general redness which we find throughout the tissues of the inflamed spot on examination after death, satisfactorily prove, that there is an increased quantity of blood sent to the part. On dissection, all the textures of the inflamed member are found preternaturally red; they seem to contain a greater quantity of blood-vessels, and these appear to be of greater size than natural. This is corroborated by an experiment made by Mr. Hunter on the ear of a rabbit. He produced inflammation in one ear; after it was fully developed, he killed the animal, injecting the head, and clearly found that the vessels of the inflamed ear were much larger and more numerous than those of the sound ear. He has given, in his work, called "Hunter on Inflammation and the Blood," a drawing of the two ears, in which this is very apparent.

Though then these circumstances prove that an increased quantity of blood is sent to the inflamed part, yet it does not follow from this that a greater quantity is circulating through it. That a greater quantity must be sent to it, is clear beyond all doubt, and many have supposed, that the additional quantity is stagnant, or confined, in the part. But there are other circumstances which, to my mind prove very distinctly, that not only a greater quantity of blood is sent to the part, but that a greater quantity passes through it. In the first place, if you make an incision into an inflamed part, you find more blood flows from it than flows from a similar incision made into a sound part. Take the case of phlegmonous erysipelas, which occupies the skin and cellular membrane. If you make an incision there, and do not go deeper than the fascia, you will find there is an immense number of vessels cut, and that twenty or thirty ounces of blood will escape from it very rapidly. If you perform an operation on an inflamed part, which, by the way, you ought not to do, or in the immediate neighbourhood of such a part, you will find a much greater number of vessels bleeding, and the bleeding to be much more profuse, than if you were cutting into a sound part. The enlarged state of the veins is a sufficient proof to me, that there is a greater quantity of circulating fluid. If there was a larger quantity of blood sent to a part, and that blood was stagnant, then the veins would not be distended. In cases of this kind I have had this experiment performed. It being necessary to bleed a patient, whose hand and fore-arm were inflamed, I had an opening made into the veins at the bend of each arm, openings as nearly as possible of the same size, and in the same space of time, about three times the quantity of blood has come from the vessel of the inflamed that escaped from that of the sound arm. This I have tried in several instances, and always with the same result, so that I can have no difficulty in stating to you decidedly, that there is both a larger quantity of blood sent into and going from an inflamed than a healthy part, and that all the notions of stagnation, spasm that prevents the passing of the blood, and atony, are totally unfounded.

This general view then leads us to see, that the phenomena of inflammation, that is, the changes which occur in the part itself, arise from an increased exertion of the circulating system in the affected part. The redness and preternatural heat are obviously accounted for by this view. The redness, by the increased quantity of blood, and the increased heat on the same principle. The heat of the body certainly depends principally on the changes produced in the blood in passing through the lungs; and when a larger quantity of that fluid is sent into, and circulates through, any part, it will obviously follow, that the temperature of that part must be increased, but still it never rises above the natural heat of the blood. The swelling is to be accounted for partly by the turgescence occasioned by the general distension of the blood-vessels, and partly by the interstitial deposition. The pain will be readily explained by the circumstance of the nerves participating, as well as all other parts, in the general disturbance. It has been a disputed point whether the pressure of the turgid vessels upon the nerves caused the pain, or the irritation of the nerves gave rise to the vascular turgidity:—it is a question of little moment, and which scarcely admits of a positive answer. The constitutional symptoms are to be regarded as sympathetic effects produced by the state of the inflamed part; and here we see that the local disturbance acts equally on the vascular, nervous, digestive, and secreting systems; they are all equally affected. Of these sympathetic affections another view may be taken; we may suppose, and some of the phenomena would seem to convey that view, that the sanguiferous system is in the first place disturbed, and that the consequence of that is the inflamed state of the vessels. That this derangement is communicated to the rest of the vascular system, and that the increased disorder in the latter will account for the disturbance that takes place in the digestive, nervous, and secreting systems.

A further question arises respecting what is called the theory of inflammation; whether we can exactly explain what that state of the minute vessels is, which produces the changes I have mentioned to you? Much attention has been paid to this subject. Many efforts have been made to discover the secret of nature in this process; but hitherto these efforts have been unsuccessful. All we can say is, that inflammation is increased exertion of the circulating system of the affected part, but in what that augmented activity consists, we cannot determine. It is an increased exertion, with an alteration in the mode of action, but we cannot point out in what that alteration consists. It is not simply a state of increased activity, because if the vascular system of the hand were increased in its ordinary action, it might occasion increase in the bulk, but would not produce inflammation. Boerhaave was of opinion, that the particles of blood stopped up the calibre of the minute vessels; Cullen thought there was a spasm in them; others have supposed them to be in a state of atony or paralysis; all these are mere visionary notions. A great many have employed themselves with microscopic investigations, observing the circulation in the transparent parts of certain animals, and then attempting to excite inflammation artificially, and to note the phenomena produced. These experimentalists have come to the most opposite conclusions. Some have supposed there is an increased activity; others that there is an obstruction. Now as these contradictory results have been deduced from direct microscopic inquiries, we can place but very little confidence in them; and, indeed, such investigations have not at all contributed towards giving us any real information on the subject of inflammation. We can decide that the seat of inflammation is in the capillary vessels; and that it is seated in the same vessels which carry on the healthy processes of nutrition, secretion, and excretion.

I may observe, however, that we do not at present understand what the modifications are in the actions of those vessels which produce the various results we witness in the different organs of the body: we do not know, for example, how it happens that the capillary vessels of one part deposit the substance of muscles; those of another part the substance of bone; of another, of fat; and so on. And as we cannot yet tell what the difference is in the minute vessels that gives rise to such remarkable differences in the healthy products of their action, so we need not be surprised that we are not able to determine exactly in what the disturbance consists which constitutes the diseased state of inflammation.

[Mr. Lawrence here stated, that having proceeded thus far in describing the general state of inflammation, he would not that evening enter upon the particular parts of the subject; but having a few minutes to spare, he would advert briefly to two or three cases in the hospital, which illustrated some important practical points. He then adverted to a case (at that moment in the hospital) of a punctured lung, the wound having been inflicted by a knife, and the patient recovered; the treatment was simply depletion to a great extent and quietude. Mr. Lawrence next referred to some cases of amputation, and gave it as his opinion, that in all instances in which serious injuries are sustained rendering it evident that amputation was necessary, the performance of the operation immediately, or within ten hours from the time of the accident, was wiser than delaying it for a longer period.]

LECTURE V.

On Inflammation;—its general Phenomena and Divisions.

In the last lecture, gentlemen, I alluded to the fact, that the vessels in an inflamed part, when examined after death, were found so much filled with blood as to make it appear that they were actually more numerous. Now, I should have entered rather more particularly on that occasion into a consideration of the appearances which inflamed parts generally exhibit after death. Under such circumstances, we find that all the textures are preternaturally red, and that the number of blood-vessels in the part seems to have increased, while they are all turgid with blood:—at the same time interstitial deposition is observed to have taken place in the structures generally.

When we come to examine the parts, they appear firmer than natural, notwithstanding which we find that they are more easily lacerated, and more readily give way under the application of any force, so that in point of fact the effect of the inflammatory process is to diminish the natural cohesion or firmness of the part affected; and this is found to be the general result of the disease taken in its active period. This particular result is often seen in the brain, where a very peculiar softening takes place, described by the French under the name *ramollissement*—a softening which was originally observed without any reference to the cause which produced it. This result had been noticed by various pathologists, but they attributed to other causes that softening of the brain, which accurate examination has proved to be merely a change dependent on inflammation.

You will probably inquire, what is the deposition which takes place into the textures of the inflamed part, and produces this firmness to the touch after death? In answer to that inquiry, it is generally stated, that the new substance thus deposited is lymph—coagulating lymph, or, as it is sometimes called, coagulable lymph. It is stated to be nearly the same substance as the fibrin of the blood, viz., that whitish and tough part which is seen after washing away the red particles from the crassamentum. It is said to be completely analogous to the white buffy coat which is seen on the surface of the crassamentum, when the blood is drawn from a patient labouring under inflammation.

These observations do not extend to the swelling which is situated in the neighbourhood of the part I have mentioned—that is soft and not firm. The disease in such a part is not so violent as in the immediate seat of the inflammation itself. There it produces an effusion of serous fluid in the cellular texture, and is similar to what takes place in dropsy. We have a good opportunity of seeing the nature of what is effused under inflammation, by observing what happens when the serous membranes are inflamed, because there, the substance which, in other parts, is deposited internally, is effused on a surface, and thus rendered obvious to the senses. When the peritoneum, or pleura, is inflamed, we find there is a kind of thin glue, that is a white, soft, and semi-transparent substance, deposited on the inflamed membrane, by which the opposite surfaces, that are naturally free and unconnected, become agglutinated. This is the state which is exhibited under slight degrees of inflammation; but when it is more violent you have an opaque yellowish substance, of a somewhat fibrous appearance, deposited on the surfaces of those membranes. This, in its chemical properties, corresponds very closely to the fibrin of the blood, and is the substance to which, more particularly, the name of lymph is given. On the surfaces of the serous membranes you see large portions of this lymph, in consequence of inflammatory disturbance. At first it lies loosely connected to the surfaces, so that you can easily scrape it off with the finger, or handle of a knife; but within a short period blood-vessels are found in that substance. These seem to be an extension of the blood-vessels from the surfaces in which the lymph is effused; at all events, the substance which is at first inorganic soon becomes organised, and this takes place more rapidly than you would at first imagine; for instance, in an inflamed intestine, blood-vessels have been injected in the newly-deposited lymph in twenty-four hours from the commencement of the inflammation.

When the lymph thus becomes organised, it assumes, more or less, the nature of the part in which it is deposited; thus, when adhesions form between the various parts contained in the cavity of the abdomen, they are assimilated in nature to the surface of the peritoneum; they constitute smooth and polished bands, or plates, preternaturally connecting the parts together, and presenting a surface which you could not, anatomically, distinguish from the natural and healthy structure of the peritoneum. Here is an example of such deposition taking place between the peritoneum and liver.

[The lecturer here exhibited a preparation, consisting of an adhesion between the surface of the liver and the peritoneal lining of the abdomen, and pointed out that the new parts corresponded in their texture with that of the peritoneum.]

We can see the same phenomenon—that is, the deposition of lymph—in inflammation of the iris. We observe either that the lymph is deposited generally through the texture of the iris, altering its colour, and changing considerably the nature and appearance of its structure, or sometimes the lymph is deposited in a distinct mass, or patch, as if a glutinous substance had been deposited on the part. We find that the matter thus poured out constitutes the bond of adhesion. It is occasionally seen between the margin of the pupil and the capsule of the crystaline lens.

In inflammation of a part like the hand, when lymph is deposited in the interior of the various textures, the phenomena are rather more obscure. We do not so clearly see what happens, but yet, from what we do see, there can be no doubt that it is the same process as that which I have detailed, namely, that, first, lymph is effused into the parts; secondly, that it becomes organised. Hence, when we examine the part at a more remote period, there is preternatural thickening and condensation of the structures; and the parts, which should be loose, are adherent. Thus we can explain how, in a case of violent inflammation, as of the hand, for instance, the motions of the fingers become materially limited.

Sometimes so much hardness is produced by this interstitial deposition in the inflamed part, and by subsequent organisation, that the part is said to take on the condition of *scirrhus;* and, indeed, we find it stated in some surgical writings, and those, too, by individuals who have been regarded as high authority, that the production of schirrhous induration is one of the consequences of inflammation. Now this is quite an erroneous view of the subject: the product of a common inflammation is merely a simple induration of the tissues in which it is seated; and you can always distinguish, even in the worst form which parts may assume from this cause, the character of the natural structure. In cases of schirrus, the organic changes proceed until the natural structure is lost and a new one is substituted in its place. The hardness that may succeed inflammation can only resemble schirrus in that one single character, and in no other. Common inflammation never leads to such a production as that which we properly name schirrus.

I enumerated to you, in the last lecture, the different effects of the inflammatory process, which are commonly called *terminations* of inflammation. I mentioned the objection to that phrase, namely, that the inflammation does not terminate with the production of these effects, except in the cases of delitescence and resolution, but that it goes on, and is often only a little diminished in violence, after these effects have taken place.

You are not to understand that each inflammation produces one only of these effects; on the contrary, you have often two or more of them combined together. When suppuration occurs from inflammation of the hand, a portion of the integuments, covering the matter, may mortify; and there you have both suppuration and mortification. You may have suppuration and mortification in one part, while the rest of the inflammation slowly subsides; that is, terminates by resolution. With the termination of inflammation in resolution, you may have considerable swelling from deposition of lymph in the inflamed textures. You are further to understand, that inflammation does not *necessarily* come to an end, after producing these effects. The progress of inflammation, and its effects, would be much more simple, and less injurious, if it were so. But after suppuration has taken place in one part of the hand; for instance, unless the case be judiciously treated, and the patient take care of himself—fresh inflammation and suppuration will occur in the neighbouring parts. Thus you will find that inflammation originating in the finger gradually extends into the palm of the hand, and from thence up the fore-arm, producing, in these various parts, changes of structure, by which the motions of the limb may be rendered very imperfect, or entirely lost.

The view of inflammation which I have exhibited to you from the appearance it assumes in an external part like the hand, has been generalised, so as to be made a kind of representation of what occurs in inflammation wherever it may be seated. The nature and effects of the diseased action may be the same, as far as we know, in the internal parts of the body; but our notions can only be formed with any degree of accuracy, when the disease is seated on the exterior.

Hence inflammation, considered abstractly, has been said to consist in the four circumstances I have detailed; viz. redness, swelling, heat, and pain. I think, however, that in order to make the enumeration complete, two other circumstances should be added. We should take into our view that very important circumstance, *interstitial deposition;* and we should also include the impaired or suspended function of the affected organ.

We should not include, in our general notion of inflammation, the occurrence of those *sympathetic* effects which I mentioned in my last lecture, because they do not invariably attend it. The sympathetic disturbance of the sanguiferous, nervous, digestive, secreting, and excreting systems, which constitute, taken together, the phenomena of inflammatory fever, are only observed when inflammation is extensive, and at the same time is very violent, or affects an important organ. You have inflammation exhibiting all the circumstances that I have mentioned in some organs of little consequence, and producing hardly any sensible effect beyond the part itself. Sympathetic constitutional disturbance, then, is not a necessary character of inflammation; but when present, it is a very important practical point for you to attend to, because it denotes either a considerable degree of inflammation, or its existence in a part of consequence. It is further important, as often leading you to a choice of means by which the inflammation is to be treated: for example, the existence of the sympathetic constitutional disturbance would probably determine you to use *general* rather than *local* bleeding.

The question, however—what is inflammation? is not satisfactorily answered by enumerating these circumstances. The redness, swelling, heat, and pain, are the external signs or symptoms of inflammation; they are the characters which denote its existence; but the question still recurs, what is the change in the state of the vessels, that produce these four signs or symptoms? What is the alteration in the action of the capillary system that gives rise to such symptoms, because it is that which properly constitutes inflammation? I have already had occasion to mention, in considering what is called the *theory* of inflammation, that this is a point not clearly made out. We really cannot say, precisely, in what that disturbance, which constitutes inflammation, consists. We know not what is the precise way in which the capillary system of the part is deranged, so as to produce the alteration. Indeed, we are not surprised to find that this is not well understood, when almost directly opposite opinions are entertained, even at this moment, respecting the state of the circulation and condition of the vessels in the inflamed spot. Some persons suppose there is an obstruction to the circulation of the blood; and others, with much greater reason, I think, that the blood passes more quickly through the part. If you open a vein between the seat of disease and the heart, you will get a much greater quantity of blood in the same time, than you would if no inflammation existed. Some have believed that the minute vessels in inflammation are in a state of atony or weakness, while others have supposed them to be in a high condition of excitement. I have alluded to the idea of some, that there is spasm of the vessels; and one circumstance that has been adduced in defence of that is, the suspension of secretion when inflammation is seated in a glandular organ. It has been said, that that arises from spasm in the minute vessels of the part. Now it does not appear to me to be necessary to recur to this explanation. The ordinary office of the capillary vessels of a gland is to secrete, but, in a state of inflammation, they are unnaturally disturbed ; they are too active and busy in their new occupation, to carry on the old one. That there can be no spasm is pretty clear, from the effusion of lymph into the interstices of the part. Unless the vessels were open, this effusion could not take place. Being unable to determine the precise nature of inflammation from the changes that take place, or to assign to it a term founded on the state of the vessels which produce these phenomena, we have been obliged here, as in other cases, to denominate inflammation symptomatically. Inflammation, from the term *flamma*, a flame, denotes the heat which usually accompanies it in external parts. If, then, we have been unable to discover the precise nature of inflammation, which is of so common occurrence, and which constitutes so large a portion of all the diseases we treat, you will not be astonished that the attempts to construct nosologies, grounded on the nature of diseases, should have altogether failed.

The four circumstances I formerly enumerated must be combined together, in order to characterise inflammation ; taken separately, they afford no proof of its existence. Redness occurs in blushing. It may be produced by mechanical friction, and yet there is no inflammation. You may make a part of the body hotter than natural, by rubbing it or exposing it to fire, without causing inflammation. Again, you may have great swelling, as in anasarca, without inflammation. You may likewise have great pain in a variety of complaints, where there is nothing like inflammation present. In order, therefore, to characterise inflammation, we must have these four circumstances all combined, and existing at the same time. When they are seen together, they certainly prove that inflammation is present, but they are not essential to proving its existence; that is, we recognise the existence of inflammation where we cannot see these four circumstances. The existence of these circumstances proves inflammation to have reached a certain height, but slighter degrees of the same disturbance may exist without them. If you have a very violent degree of disturbance in the capillary vessels, you will have that part swelled, red, hot, and painful ; but under many circumstances, interstitial depositions, and the consequent changes which it produces, namely, thickening, induration, consolidation, and opacity, afford the only criterion, and we find them a satisfactory criterion of the state of inflammation. In the case of serous membrane, we do not find the texture of the membrane swelled under inflammation; and, I believe, in many instances, we are hardly able to say it is redder than natural. The arachnoid coat of the brain is frequently the seat of inflammation, but it exhibits no redness; the texture of the membrane is swelled and rendered opaque, but it is by no means red. We see the iris inflamed, and have no doubt of the existence of inflammation, though we cannot discern it to be swelled, red, hot, or painful. In inflammation of the cornea, we see merely that there is interstitial deposition. Even considering these characters as the criterion of inflammation, they are only of importance in *external* organs; for when we come to *internal* parts, we cannot apply this criterion. We cannot tell whether the liver or the lungs be swelled, red, hot, and painful. How can we say whether or not the retina is in that condition? So that these four circumstances are of general, but not of universal application.

Inflammation, gentlemen, is by no means one and the same process under all circumstances; on the contrary, it varies very much. If you cut or scratch the finger, inflammation will be produced. Sometimes, without any injury, an inflammation takes place near to the nail, constituting what we call whitlow: the finger may be inflamed with the rest of the limb in erysipelas; it may be the seat of chilblain, gout, or rheumatism. Here, then, are six different states of the same part, all called inflammation.

Inflammations, in the first place, differ in degree, that is, there may be *more* or *less* of the disturbance. When there is more, the progress of the case is rapid; when there is less, it proceeds more slowly. This distinction is marked, generally, by the terms *acute* and *chronic*. Violence of symptoms, and rapidity of progress, denote acute inflammation; mildness of symptoms and slowness of progress, chronic inflammation. Now you will not understand from this, that there are exactly two differences of degree, and that all inflammations must either be rapid or slow, so as to come under the one or the other head. These words only denote in a general way the difference; and, in point of fact, there is an infinite number of different degrees. You are often at a loss to determine whether you should assign a particular inflammation to the head of the acute, or to that of the chronic state. Acute and chronic are not, in point of sense, exactly opposed to each other. The epithet acute denotes the violent state of symptoms, while the term chronic points out the duration of the complaint, so that the terms are not precisely contrary to each other. Acute is called also *active*, *violent*, or *phlegmonous* inflammation. The term phlegmonous is frequently employed; it is derived from the Greek word *phlegmon*, and is the term applied by writers to the active form of inflammation seated in the cellular membrane and skin, which terminates in abscess. In this, the characters I have described are particularly well marked. The description that has been given of inflammation of the hand, will sufficiently show what is acute, active, or phlegmonous inflammation: it is a violent disturbance which cannot last very long. Unless it is cut short by proper treatment, it will soon produce either mortification or suppuration. It is too violent a disturbance to last for any length of time: like a very violent fire, it will soon burn itself out. Chronic is also called *languid*, *slow*, or *indolent*, and its characters vary much from those of the acute. The vascular disturbance and redness are much less; often there are hardly any, and the pain is slight. Frequently chronic inflammation will take place, proceed to a considerable extent, and last for some time, before the patient is aware of its existence. But though the chronic may appear to be of much less consequence than the acute; in this view, considering it in another way, it is of much more importance. The swelling of the parts from interstitial deposition is much more, and consequently, there is a much more serious change in the structure of the affected organs.

With respect to the deposition which takes place in chronic inflammation, we are hardly able to speak very clearly. It is difficult to know the precise nature of the new matter deposited, and animal chemistry has not yet afforded us any very clear information upon it. If we take the example of the testicles, which are often the seat of this disease; on cutting into them, we shall find a considerable quantity of new matter, quite different from the natural structure of the parts, disseminated through them. If a testicle thus diseased be injected, the new matter is found to admit only partially the substance of the injection into it. Examples of this I now exhibit to you. [The preparations were shown on the table.] In the case of the serous membranes, we frequently see a new production formed, under chronic inflammation, of a very marked kind; and I now show you the specimen of a complete adventitious membrane, formed on the inner surface of the dura mater, in consequence of chronic inflammation in the head.

Thus you see, that in acute inflammation there is very violent disturbance, which is of a temporary kind; it quickly passes by, and the part recovers its natural condition. In chronic inflammation, the appearances are less alarming, and the disturbance seems to be at the moment less serious, but the change of structure is much more, and considerable and often serious disorganisation results from it, which importantly impairs, or quite destroys, the function of the part. The degree of danger, then, in the two processes, is nearly in an inverse ratio to their apparent violence.

We frequently hear and read of the expressions acute and chronic stages of inflammation. If we survey any particular case, we do not find that the inflammation is one and the same process throughout; we find that there is a succession of phenomena; we find that inflammation commences insensibly, gradually increasing, till it acquires a certain development. It remains for a time in that state, and then gradually recedes as the part recovers a healthy condition. The whole of the circumstances embraced in this course, pass under the name of inflammation, and yet the various portions of the progress differ considerably from each other. If we were to divide each inflammation into three periods—a period of formation, in which the disease arises and proceeds to a certain extent, a period of full development, and another of decline, we should find the two first of these are nearly alike in active process, that is, they occupy nearly the same length of time; but the third period, that which intervenes from the symptoms beginning to lessen, until the part recovers its natural state, differs very much in its duration in different instances. When the disease is very violent, when it is allowed to pursue its progress uncontrolled; when the patient neglects himself; when little or no treatment is employed; and, more particularly, when the circumstances that have excited inflammation still continue to act, although the more violent symptoms may be lessened, yet the state of inflammation continues for a long period before the natural condition is recovered. The part is still inflamed, the pain is less, however, and the interruption of the function is diminished. This minor degree of inflammation is frequently called the chronic stage; and the former period in which the symptoms have been more violent, is called the acute. Thus the words acute and chronic are employed to designate the different periods of one and the same inflammation. If inflammation has been very actively treated, and judicious means employed to arrest its progress, the part recovers its natural state very quickly, and you can hardly say that any chronic stage occurs.

Some persons have not only employed these terms to designate one and the same inflammation, but they have contended, that these two periods are totally different kinds of disturbance; that the acute is the result of increased action, and that the chronic is the result of debility, or weakness in the part; and they have founded on this alleged difference a corresponding diversity of treatment, asserting that the chronic requires tonics and stimulating treatment, and that the acute calls for the contrary ; I consider that this view is altogether erroneous. Without undertaking to say there is no difference between the acute and chronic generally, I have no hesitation in stating, that there is no essential difference between the acute and chronic stages of one and the same inflammation. The chronic period is one of less violent disturbance, but still it is the same kind of disorder, only differing somewhat in degree. In proof of this, we find the acute passing into the chronic, and the chronic may relapse into the acute. When inflammation in the eye has gone into its chronic stage, if the person uses the organ, and has other causes of excitement applied to it, he may have, all on a sudden, the phenomena of the acute reproduced; and when you find in those states that the one condition can pass into the other, and *vice versa*, I think you cannot admit, for a moment, the notion that they are opposite in their nature and require opposite treatment.

Again; we sometimes hear of active and passive inflammation, which convey to my mind either no notion at all, or an erroneous one. I have mentioned to you, generally, that inflammation consists in increased action, and consequently passive inflammation implies a contradiction in terms. The notion of passive inflammation is founded on the same erroneous view which I have mentioned respecting the chronic, that there is a condition of inflammation dependent on debility. Admitting the acute to depend on augmented action, it has been contended that chronic must depend on the contrary: I know of no such state. It is true, inflammations will differ according to the strength or weakness of patients ; but what I mean to contend for is, that there is no inflammation taking its origin from a state of weakness of the parts themselves. A state of weakness, in some cases, may be the remote cause, but when inflammation occurs, that inflammation is owing to a state of increased action in the vessels of the part.

We also hear of the terms arterial and venous congestion. I acknowledge that these convey no kind of clear idea to my mind. The minute vessels, the capillary system, in which inflammation seems incontestably to rest, is an inextricable net-work, in which we cannot distinguish arteries from veins. After we have reached a certain point, we cannot make a difference between them ; therefore we are quite unable to say that one state of inflammation is owing to the congestion of arteries, and another to that of the veins.

Inflammation differs essentially in the effect it is capable of producing. When causes of disease are applied to internal parts, we sometimes observe derangement in their functions without our knowing exactly whether there is a change in the condition of the parts, and we call that derangement a state of disorder, or irritation. This, probably, is the commencement of the disturbance, which, in a more advanced condition, would be considered inflammation. We sometimes see a simple state of distention in the vessels; this is called congestion. Sometimes that state of fulness is evinced by hæmorrhage, by the discharge of blood from the affected part. This may take place from the surface, as in mucous membranes, or into the texture of a part, as in the brain, causing apoplexy. Again, we have the effusion of serum, the effusion of lymph, the formation of pus—ulceration: these are the varieties in point of fact which characterize different degrees of inflammation. We have not, perhaps, any direct evidence for saying that the disturbance in a part, which we call irritation, or disorder, is actually the commencement of inflammation; we only assume it as probable. In fact, irritation, if employed as contra-distinguished from inflammation, does not denote any definite state that I am acquainted with. Generally speaking, irritation is used to denote disturbance in the nervous system; but if we adopt it in reference to the body generally, I think we shall be able, in most instances, to analyse it into something like inflammation.

Now, the various effects I have mentioned, are generally ascribed to difference in the degrees of inflammation, but not entirely so. Hæmorrhage is the result of increased action, which chiefly shews itself in the mucous membranes: hæmorrhage into the substance of a part is rather an uncommon occurrence; it takes place, however, in the affections of some internal organs; it takes place into the substance of the brain and lungs, but seldom into any other part. Suppuration seldom takes place in internal glandular parts. If we admit the spleen to be of that character, I fancy an instance has hardly been known of abscess forming there; it is very rarely that abscess forms in the kidney; abscess in the liver is not common in these climates; so that there are peculiarities in the effect of inflammation which are not altogether referable to difference in degree.

Inflammation, then, differs very much in its kind and character, that difference being, in great measure, dependent on the cause that produces it. I have already mentioned the differences between common and specific inflammation, and I need not advert to this again. I would only say that, in specific diseases, we generally find a disposition to certain changes in each case; in syphilis, for instance, we find that inflammation generally terminates in ulceration; in scrofula, the formation of abscess; and the deposition of tubercles in various organs, are the most ordinary termination.

In common inflammation, there is generally an uniform progress of the affection from its first commencement to its termination. In specific, there are frequent irregularities. The particular sudden disappearance of the inflammation, or delitescence, is frequently observed. This is the case in gouty and rheumatic inflammations. It is by no means uncommon in them, to have the inflammation suddenly stopped in one part, and as suddenly appear in another; and this has been called metastasis, which has been considered to denote a translation of the disease. The idea which has been entertained of metastasis is, that the diseased matter which was seated in one organ, has been conveyed to another part of the body. It is a notion founded on the old ideas of humoral pathology. Now, without entertaining any such mechanical idea of it, I may mention to you that it frequently happens in gouty inflammation, that the inflammation quickly disappears from one part, and another becomes as quickly affected. Indeed, that is all we can say about it; for how it happens, we are totally unable to explain. A person who has swelling of various joints, will have those swellings suddenly removed, and perhaps immediately afterwards inflammation comes on in the lungs or heart; and it is this liability to metastasis, that constitutes a particular danger in such cases.

These then are some of the material points in which inflammations differ from each other. There are some few others which it is only necessary for me to advert to generally. There are diversities according to temperament, age, sex, mode of life, and diet. Inflammations are also modified by the state of the climate, and condition of the atmosphere. Certain peculiarities in the atmosphere are capable of exercising a marked influence over inflammatory diseases; hence we find that, under certain circumstances, particular kinds of inflammation will take place in large numbers: as in hospitals, you will find at times a great number of cases of erysipelas.

I shall proceed with the Causes of Inflammation at our next meeting.

LECTURE VI.

Causes and Effects of Inflammation.

When speaking to you, gentlemen, in the last lecture, of the varieties of inflammatory process, I fear, that in the attempt to conclude the subject within the period of one hour, I may not have explained myself so fully on all the points as I should have wished. I spoke to you of the various effects which inflammation produces, but I do not know that I enumerated them completely; I now, therefore, recapitulate what I then stated.

It is difficult to give an exact description of all the stages which are included between the first deviation from a condition of health and the more striking effects of disease. But I endeavoured to enumerate the various results of the process, nearly in the following terms:

Irritation, or *Disorder.*—This, in respect to internal organs, is evinced simply by an alteration of functions; and we cannot exactly say whether, under certain disturbances in them, such actual organic change is produced as would warrant the term inflammation; but in external parts, we are often able to see such a disturbance accompanying even slight alteration of the functions. Thus, distention of the vessels of the eye will arise from a slight cause; we should have no means of ascertaining the existence of a similar condition, if it were in an internal organ. We shall consider irritation, or disorder, then, as the first step in the deviation from health, when any cause of disease is applied to a part. We have, besides congestion, or what is called determination of blood, a condition which is generally ascertainable after death, for you can see a preternatural fulness of vessels in the organ: hæmorrhage—that is, a breach of some of the vessels of a part, in consequence of which blood is effused, making its appearance externally if it takes place on the surface of a membrane, having an external opening, or in internal parts if there be no external opening; effusion of serum, effusion of lymph, suppuration, ulceration, and gangrene. We must regard these various circumstances only as modifications of the inflammatory state. We cannot exactly assert that all these are simple differences in degree. We cannot, in that respect, compare them to each other, because we find that differences of texture produce a tendency to one form of change rather than another, without our being able to say that the one is either more or less than the other. Hæmorrhage, for example, frequently occurs from the surface of mucous membranes; it does not take place from that of serous membranes. We cannot determine whether the disturbance, which produces hæmorrhage in mucous membranes, is either greater or less than that which causes effusion of lymph in the serous. Although we have arranged them according to their general differences in degree, we cannot assert, in each stage of the progress, that that stage is greater than the one which immediately precedes, or less than that which follows, because the difference of organization causes varieties in the result that we cannot account for.

These are the immediate effects; of the more remote results, the chief is induration, or thickening, and hardness, more or less interfering with function. To this is opposed another kind of change, viz., preternatural softening, observable particularly in the brain. Induration exhibits itself under two forms. In the majority of instances, the indurated substance is of a white appearance, that is, it possesses no great number of blood-vessels. But in certain organs, where there is an abundance of capillaries, a greater redness is produced, and a sort of liver-like colour; hence the term hepatisation, employed by the French to denote a red kind of induration.

I should have spoken to you of the varieties inflammation presents in the several textures. When you are informed that inflammation is augmented action of the blood-vessels—when you learn that the seat of the disturbance is in the capillaries—when you know, at the same time, that the arrangement of these vessels presents differences in each texture and organ, you will be prepared to conclude, that the inflammatory process will have its peculiar characters in each part. In each of the three classes of membranes, inflammation exhibits striking differences. In mucous membranes it is characterised by great distension of the blood-vessels, with which the surface of such membranes is plentifully supplied. Thus great increase of redness: a bright scarlet tint is one characteristic of inflammation in this texture; swelling and increased thickness of the membrane is another. Increased quantity and altered quality of the fluid poured out by the membrane—that alteration causing the fluid to have nearly the appearance of pus, is a further character. In inflamed serous membranes there is no swelling or thickness; there is none, or hardly any perceptible increase of redness. There is increased action of the exhalents, which pour out either a thin whey-like fluid, coagulating lymph, or pus. The coagulable lymph becoming organised, constitutes bands of adhesion or adventitious membranes covering the inflamed surface. It is this new formation that sometimes gives to the membranes the appearance of being thickened; whereas, if you remove the deposition, you find that the part has its natural thinness. So great and so essential is the difference between the product of inflammation in the two cases, that you can hardly, by any artificial means, produce in the one instance that which naturally takes place in the other. Mr. Hunter tried to produce in mucous membrane the same deposition of lymph that takes place on serous, but he could not succeed, or succeeded only very partially. You will immediately perceive, when you reflect on what the organs are, to which the mucous and serous membranes respectively belong, that if the mucous were liable to the same deposition of lymph and preternatural adhesions, the functions of the parts would be completely destroyed. Consider what would be the state of the stomach and other parts of the alimentary canal; these tubes would be completely blocked up by the deposition and the unnatural adhesions which take place in the serous membrane.

In inflammation of the fibrous membranes, you do not find either effusion of lymph, or the secretion of fluid like pus, but nterstitial deposition and thickening of the part.

All textures of the body, when injured, wounded, or divided, vill suppurate; but in inflammations of the various organs rom internal causes, the tendency to this termination varies reatly. The cellular membrane is particularly prone to suppuration, but the glandular parts are little susceptible of it. I ancy it has happened only to very few to have seen abscess of he kidney or spleen. In these climates it is very rare to see t taking place in the liver. Inflammation frequently takes lace in the testicle, yet suppuration of it is by no means common. Suppuration is hardly ever seen, speaking either of spou-ineous inflammation, or that which arises from other causes, n the substance of the muscles, or in the tunics of the stomach r other parts of the alimentary canal. Mortification takes lace easily in the cellular membrane; the skin is much less ubject to it. Mortification is much more common in external han in internal parts.

I next come to the causes of inflammation, and these include most all the agencies that can affect the human body.

In the first place, inflammation may be excited by all kinds injuries; whether mechanical, chemical, or of a mixed na-re. It is excited by the infliction of wounds, whether they e incised, lacerated, or contused. Inflammation is conse-uent, therefore, upon surgical operations. It is produced by essure on the body, whether exerted externally, or taking ace from internal causes, such as the distension or approach to the surface of a tumour or aneurism. Inflammation is produced by the application of heat, or of strong acids to any of the animal textures; by pure alkalies, and various other acrid matters, whether animal or vegetable. Under the former head, we may mention morbific poisons. Again, it is produced by the bites and stings of a variety of insects, by those of venomous serpents, and by the bites of rabid animals. It is produced by the application of cold or moisture; and by various atmospherical changes, the nature of which we cannot exactly appreciate; and here we find that some such influences are capable of producing inflammation directly; thus a current of cold air, particularly if combined with moisture, will cause inflammation of the eye. The same immediately applied to the mucous membrane of the nose, throat, trachea, and air-passages of the lungs, will cause inflammation of these parts. Again, the application of cold or moisture to an external part may bring on inflammation in some internal organ, or in some part remote from the seat of the direct application. Thus, if a person get wet in the feet, he may have an attack of catarrh, sore throat, or rheumatism. Cold and moisture, and the various atmospherical changes, are thus capable of influencing indirectly the internal and comparatively remote parts. An organ may become inflamed in consequence of excessive exertion in the execution of its natural function. Thus, if the eye be excessively exerted in the observation of minute objects, inflammation may be produced in it. Excessive mental exertion will cause disorder in the head. In the same way, the stomach or intestines, the lungs, or the various other organs, may be immediately inflamed, in consequence of unnatural exertion in the execution of their ordinary functions.

The causes of inflammation now mentioned, admit of being divided into two classes: some of them, such as external injuries, or the application of chemical substances or morbific animal poisons, will produce inflammation wherever they are inflicted. They certainly and necessarily produce it in some degree; it may be more or less. Suppose we take the case of a surgical operation. If the operation be performed on a person who has been carefully prepared for it, and who is, in other respects, healthy, only a slight degree of inflammation will be the consequence; but if the individual should be unhealthy, or if no pains should have been taken to place him under favourable circumstances, a very considerable degree of inflammation will be produced. If you extract a cataract from an individual in a healthy condition of body, and whom you have carefully prepared for it, perhaps you will have hardly any perceptible inflammation at all; but if the operation be performed on a person of gouty habit, arthritic inflammation may come on, and even frustrate the intention of the operator. If it is performed on a person of plethoric habit, without means having been adopted to prepare him, an attack of common inflammation may be the result, and which may have the same effect.

With respect to other causes—that is, the application of cold and moisture, or the excessive exertion of the organ itself—they do not act invariably so as to produce inflammation, but they do so under certain circumstances. A considerable number of individuals may be exposed to the action of either cause, and in many of them no kind of apparent result takes place—but still a certain proportion of them suffer from it. For instance: you may have a considerable number of persons exposed to cold, wind, rain, or snow, and the greater number of these shall not suffer any injurious consequences at all; but perhaps one out of the number may have a sore-throat produced, another may have an attack of catarrh, a third of rheumatism. A number of persons may sit down to a feast, and perhaps only one individual out of the whole will experience an attack of apoplexy or palsy. A person who is in good health receives a slight blow on the foot, or a slight twist of the ankle, and, with the exception of the temporary inconvenience that is produced, he experiences no further injury; but if either of these circumstances happen to a person of gross habit, he, perhaps, has an attack of the gout brought on in the part.

Thus we have to consider not merely the causes, but the state of the individual to whom they are applied; and this brings us to the distinction I have already pointed out between the direct or immediate, and the remote or predisposing causes.

The direct or immediate, in many individuals, will not produce disease, unless the individual shall have been prepared for its action, by the effect of the remote or predisposing cause.

Under the head of remote, or predisposing causes to inflammation or diseases of any kind, we may enumerate the natural peculiarities of organization which belong to individuals. All mankind are not constructed alike. There are differences in organization; there are consequent differences in the functions executed by the organs, and hence the state of health, which is a state of exertion in the functions of all the organs, will present a variety in each individual. If we look throughout the whole of the works of nature, we see that it appears to be her object everywhere to produce variety. Nature, if we may personify her, seems to have nothing of the quaker taste; she takes no delight in uniformity of colour or shape. She has not thought fit to cut out all mankind by one pattern. There are, in fact, varieties in the organization and function of every part; varieties that are common to a considerable number of individuals, and they being arranged and classed together, constitute what physiologists have termed differences of temperament or constitution. It is the predominancy of particular actions or sympathies of the organs, in certain individuals, that constitute the sanguineous, the nervous, the lymphatic, and the chylopoietic temperaments. In the first, the circulating system; in the second, the nervous system; in the third, the absorbent; and in the fourth, the alimentary or digestive system, seems to be predominant, or to bear the leading character in the organization. These differences in the temperament, or constitution, have been recognized from the remotest times, and no doubt they are found in nature.

There are, then, certain general differences which are common to a number of individuals; and there are certain peculiar differences which belong to each part and person; these last are called *idiosyncracies*. This is a Greek term, which means peculiar mixture, as if it denoted the particular proportions in which the various organic elements are combined in each individual. Now we find, in point of fact, that there is something peculiar in the constitution and bodily character of every one. We see this particularly marked by the effects which certain external agents produce on each individual. We observe that particular medicines, or particular kinds of food, produce certain effects on some individuals that they do not on others. There are some persons in whom it is difficult to affect the system with mercury; there are others, in whom a blue pill, or a small dose of calomel, will produce a violent salivation; and there are a variety of other differences of the same kind.

Another law of nature is, that organized beings produce, by generation, new beings like themselves, otherwise species and races would not be preserved: and this law, by which the progeny partakes of the character of the parents that give birth to it, extends to the diversities I have just mentioned—the difference of temperament, and sometimes the individual difference;—and thus it happens that the temperament and disposition to certain diseases, are inherited and run, in different families, just like particular forms of the features.

We come, in the next place, in considering the circumstances which give predisposition to certain diseases, to consider what are called morbid differences; these approach nearer to the state of disease than the differences of temperament mentioned, though it would not be very easy to draw a line of distinction between them. As examples of morbid disposition, I may mention scrofula, gout, and rheumatism; these, in some measure, depend on natural and original differences of constitution, and are transmitted hereditarily; but in other instances they are produced by external agencies. An individual who may be supposed to be born healthy, may have a morbid disposition to disease, which may be either hereditary or acquired. It is to this the technical name of diathesis is applied. A scrofulous disposition, or scrofulous diathesis; a rheumatic or gouty disposition, or rheumatic or gouty diathesis—these are equivalent terms. Age and sex, in some instances, give a particular disposition to certain diseases. Climates have certainly a marked influence in disposing to disease. Atmospherical heat disposes to inflammation, and particularly to that of the skin. Erysipelas is a very common and serious occurrence in hot countries. The liver is very liable to be affected by high temperature. Thus, though abscess of this organ is rare in this country, yet nothing is more common than such an affection in Europeans who visit the East or West Indies. The yellow fever, a dreadful scourge in the latter country, manifestly owes its origin to the effect of a high degree of heat on the system; in fact, the degree to which the liver participates is evinced by the name yellow fever, a name derived from the tint of the skin consequent on the biliary secretion. It is said that, in some of those places, if Fahrenheit's thermometer remains steady at 80° for four or five or six weeks, the yellow fever will invariably occur.

Now I have thus far considered inflammation as the result of causes acting directly on the organs that are the seat of such disorder; that is, I have considered what we may call accidental inflammations—inflammations that arise directly from causes immediately applied. But in many instances we cannot trace the application of any cause to the affected organ: this is the case with a great number of internal inflammations; such are called spontaneous inflammations. By this we do not mean to assert, that the inflammation actually arises of itself, only that it takes place without an apparent adequate cause. We see in children inflammation of the brain, leading to effusion of fluid into the ventricles, or hydrocephalus; we see inflammation of the arachnoid coat and pia mater in the adult, producing various affections of the head, and, many times, mental derangement. Inflammation may occur in the liver or stomach—erysipelas may attack the face—the synovial membrane of a joint may become inflamed, or a joint generally. Thus inflammatory affections may occur either in internal or external organs, where we cannot trace the application to those organs of any causes capable of producing disease; hence we have established the head of spontaneous, in contradistinction to accidental inflammation.

Now though we cannot in many of these cases trace the application of local causes to the seat of disease, we can often discern the remote or predisposing circumstance, which we may consider to have had an influence in originating the disease. We find these remote or predisposing causes also actually capable of leading to the occurrence of accidental inflammation.

The most powerful and general of the predisposing causes, whether of spontaneous or of accidental inflammation, undoubtedly is what is called, in common language, fulness of habit, or what we technically call plethora of the system, that is, an unhealthy condition of the frame, produced by taking into the body an excessive quantity of new materials, by indulgence in the pleasures of the table, by eating and drinking too much. The natural supply of the frame requires, that a certain quantity of new material should be introduced into it, persons are in the habit of taking perhaps twice or three times the quantity the natural wants of the economy require; hence arises a state of repletion; the digestive organs are overloaded, and a state of repletion occurs in the sanguiferous system, which receives the new matter from the digestive organs. Persons commit errors with respect to diet, not only in quantity, but in quality, and both these are chiefly observed in two articles, namely, animal food and fermented liquors. It is, perhaps, rather difficult to determine what is the minimum of supply that will keep the body in a healthy or proper state; but we have facts from which we conclude, that a much smaller quantity is sufficient for that purpose than persons are in the habit of taking. There is a celebrated example of this, which has been frequently cited in this theatre, that of Cornaro, a Venetian nobleman. He had been in the habit of indulging, like the rest of mankind, till he arrived at about the age of 40 years. He then lost his health, and became the subject of serious and various ailments. He in vain invoked the aid of the medical art. He then undertook his own case, and resolved to try what he could do by abstinence. By practising a system of rigid temperance, in a short time he got rid of all the symptoms he had been troubled with. He continued to pursue this course until he arrived at nearly a hundred years of age, leading a very active life, in the full enjoyment of all his powers, bodily and mental, and holding important offices in the state, and being in fact a character of considerable importance in Venice. He has left behind him a small book, entitled, "Praises of a Sober Life;" and in that he states of himself what I have mentioned, and says, that his diet consisted of twelve ounces of solid food and fourteen of liquid, per diem; that would be four ounces of solid food taken three times a day. He states that this system of abstinence was so necessary to the enjoyment of his health, that when he exceeded the twelve ounces and took fourteen, he immediately became hot and feverish, and felt the necessity of going back to his former quantity. I was very well acquainted with a lady, the mother of a numerous family, always robust, healthy, and capable of taking plenty of exercise. She lived very carefully, never taking more than a single glass of wine a day, and seldom that, with about half the quantity of food that persons ordinarily take. She, however, was occasionally subject to disease, and that was of an inflammatory nature (erysipelas), though she lived in this abstemious way. At rather an advanced period of life she had an attack of determination of blood to the head, which required an active system of abstinence for a considerable time. This proves that the quantity of animal food and fermented liquor in which people commonly indulge, and which they suppose is necessary to health, is not so, as may be shown by a variety of facts.

I was myself acquainted with a lady, who, from a kind of whim, began to live on vegetable diet. She was in good health, and it was not necessary at all for her to give up her ordinary habits of life. She took a fancy, however, to live in this way, and on distilled water, and, in point of fact, she did live on fruit and vegetables, without tasting animal substance, except the milk she took in her tea, for several years. I never knew a more active person; she made nothing of walking ten miles, and could walk twenty. She was a very little, sprightly-made woman. She bore two children during the time I knew her, and suckled them for about twelve months each, during which time she took only what I have mentioned—vegetables and fruit to eat, and distilled water to drink, taking nothing stronger than tea, or tea mixed with milk; yet they were fine healthy children.

In London we have the opportunity of observing the effects of habits contrary to these. Persons who follow laborious occupations here, such as porters, coal-heavers, draymen, and a variety of other individuals, do eat and drink most *enormously*. A great number of them pass through this hospital, and give us the opportunity of seeing their habits. As for two or three pots of porter a day, that is quite a moderate quantity! You really would hardly believe, that many of these persons drink eight, ten, twelve, or fourteen quarts of porter a day, filling up the intervals with glasses of gin; and taking animal food in proportions that would perfectly astonish you! Now these are individuals formed by their natural constitutions for robustness and long life; they are strong men, who come from the country, and who, if they took only moderate care of themselves, might reach old age, with full possession of their bodily powers, but they very seldom come to any thing near it; we see a great many of them out here. Their habits of excess predispose them to inflammation; they suffer from disease of the liver, stomach, lungs, heart, &c. Thus most of them, if their lives are not cut short by some accidental injury, which generally leads to most severe inflammation, die of dropsy about the age of fifty. I remember having been called to a very fine, hearty, young fellow, one of Whitbread's draymen, under thirty years of age; he was quite a picture of strength; he had merely grazed his leg against the iron hoop of a but. He did not think much of the accident, and went about his occupation; but soon his leg began to be painful; it became much more troublesome; and within forty-eight hours after he met with the injury I saw him. The whole of his leg was then enormously swelled; it was livid, black, blue, and the limb mortified up to his very body, and merely from the occurrence of this slight accident.

You will readily understand, that the effects produced by an erroneous system of diet must be very considerable, for the cause of disease is incessantly applied. Persons eat and drink day after day, and year after year. When you inquire into a person's habits, probably he will tell you that he is very moderate, only taking three or four glasses of wine a day. In the first instance, that does seem to be very moderate, but you must multiply that three or four by 365, and then you see the enormous quantity of alcohol that goes into his stomach in the course of a year. This state of unnatural repletion, in the first place, seems to be attended with rather an improved state of health; the person seems to be ruddy, cheerful, and healthy; but after a certain length of time, a condition of the body is produced which approaches to disease: there is a preternatural fulness of pulse, a disposition to heat, and thirst on exertion. Such an individual lives on the brink of disease; a slight impulse is sufficient to destroy the balance and push him over.

With respect to the state of *plethora* in those cases, the accuracy of that expression has been doubted. It has been questioned whether the vessels contain more blood in such cases, and this it is difficult to determine. We do not know what the natural, regular, or normal quantity of blood is in a person. We have no means of ascertaining, in a particular case, how much blood is in the system, therefore we want data for comparison. We cannot say whether an individual, in the state I have mentioned, has more blood in his vessels than he has at another period; yet we find in many of those individuals, that there is an unnatural fulness and strength of pulse. It is excited by the slightest exertion. When we take blood from them, it frequently presents the appearance which characterises blood drawn from persons labouring under inflammation; it is buffed and cupped, so that whether the quantity is greater or not, at all events we can determine that such individuals are in an unhealthy state. They are in a state very similar to that of females in whom menstruation is suppressed, where you will have flushed countenance, pain of head, and heat of the surface; or to that of females in whom menstruation has not occurred at the time it ought. It is a similar state to that which occurs in persons where old ulcers have been rapidly healed. For my own part I am inclined to think, that there is an increased quantity of blood in the system; and that the expression of *plethora* applied in such cases is literally correct. I remember a person coming under my care with cataract, for the purpose of undergoing the operation. He was a man between forty and fifty years of age. When I asked him how he was in his general health, he said, perfectly well. But he had an enormous head, with a particularly large face, and that of a very deep brownish sort of red colour: in fact, the appearance indicated that state of the capillary system, which I did not like in a person about to undergo such an operation. This led me into further inquiries, and I found that he had been in the habit of taking an inordinate quantity of animal food and fermented liquor. He had a full, strong, and hard pulse, and there were other circumstances, in the state of his tongue, digestive organs, and so forth, which proved, though he said he was in a healthy state, that he was in a condition very far from it; in that condition in which I felt perfectly satisfied, if I performed the operation, inflammation of a destructive kind would be the result. I did not operate for ten days or a fortnight afterwards. In that time I took 120 ounces of blood from him, and did not conceive it safe to operate without doing so. Now, I conceive, that this was a larger quantity than I could have taken with advantage, had there not been more in his veins than natural. With this depletion were combined the daily use of purgatives, and restriction from all animal food and fermented liquor, his diet being confined to gruel and broth. At the end of the time he was another man to what he had been at the commencement: thus I brought him to the point at which I thought the operation could be safely performed, and it so turned out; in fact, I never saw one succeed more completely.

At our next meeting I shall proceed to consider the forms of inflammation which are produced sympathetically.

LECTURE VII.

Sympathetic Inflammation.—Disorder of the Digestive Organs.

I HAVE hitherto spoken to you, gentlemen, of inflammation, as being brought on by causes which act immediately on the affected part; either by such as certainly and necessarily produce it in some degree wherein they are applied, or such as act only on individuals who have been previously disposed to receive their influence. I have mentioned to you as the most powerful of the circumstances which gave a free disposition to inflammatory disease, *fulness of habit*, or, as it is technically called, *plethora*, brought on by an excess of nutrition. There are, however, other and numerous cases, in which we can trace no direct application of any cause to the affected part. At the same time we discern the existence of disturbance in other quarters, and find, in many cases, that the remedy for this disturbance will cure the inflammation. Hence we consider, that the latter is the consequence of disturbance in other parts of the economy. The former are called cases of *idiophatic* inflammation, in which there are causes directly applied; the latter, *sympathetic*, which may be defined as the consequence of disease previously existing in other parts; it is disease excited by, or dependent on, the previous existence of disease elsewhere.

Now I shall just exemplify this sympathetic occurrence of inflammation by certain cases, which will show you the manner in which it takes place. I had a gentleman under my care, who laboured under an affection of the glands of the axilla. He was a young man, accustomed to very free living, and did not submit very willingly to those restraints of diet his case required. One day he thought he felt himself low and weak, and fancied that a good meal would do him good. He accordingly eat a hearty dinner, and drank some wine in opposition to the injunctions I had issued. He found himself not at all the worse for this, perhaps rather better, and this induced him to repeat the indulgence. On the day after, he took another very hearty meal, drank some bottled ale, and acknowledged that he had drunk about a pint of port wine afterwards. This disordered him very much, he passed a very bad night, and felt very unwell the following day. In the course of the second day he became excessively ill indeed; he was very hot, restless, and could get no sleep; he had intense and violent pain in the neighbourhood of the local disease. He sent for me very early next morning; and when I saw him, I found the case to be one of the most violent erysipelatous inflammations of the skin I ever saw in my life. It extended from the shoulder down to the elbow, including the axilla. The skin was of the most vivid red, and thickly covered in every part by seruus vesicles. And here, you observe, that no direct application of any cause capable of exciting disease, was made to the part in which it took place; it was a sympathetic effect on the skin, produced by disturbance in the digestive organs, consequent on imprudent indulgence. I removed in this hospital a loose cartillage from the knee-joint of an adult. At the end of four or five days, the wound made into the joint, for letting out this foreign body, was completely healed by adhesion; but unexpectedly, and in some way we could not account for, hæmorrhage took place from the wound, a coagulum of blood formed in the cavity, separated the adhesion of the lips of the wound, so that the object of the operation—producing an immediate union into the joint—was frustrated. The consequence was, that inflammation and suppuration of the joint occurred; the patient became extremely feverish and ill, and he died. On opening the body, I found inflammation of the *liver*, with an immense number of depositions, partly of a purulent nature, and partly of a substance like lymph, in masses from the size of a pea to that of a hazel nut, disseminated throughout the whole of the liver, and one such deposition in the substance of the brain. In a case that was under my care, of inflammation of a vein of the arm consequent on blood-letting, that is, technically, *phlebitis*, great distension of one knee-joint, and of the thigh on that side, took place a short time before death. On examination after death, I found most violent inflammation of the synovial membrane, and immense deposition of matter between the fibres of the muscles on the anterior part of the same limb. In another case of phlebitis, I found inflammation of the pericardium, with a large quantity of sero-purulent fluid in its cavity; also a very singular occurrence—deposition of pus in the muscular substance of one part of the heart.

Occurrences of this kind are by no means rare. There is a paper in the fourteenth volume of the *Medico-Chirurgical Transactions*, written by the late Mr. Rose, entitled, "Observations on Depositiuns of Pus and Lymph, occurring in the Lungs and other Viscera, after injuries of different parts of the body," containing a great many cases in which serious inflammatory affections, in various internal organs, were found, in conjunction with serious local injuries. Inflammatory affections of the peritoneum, pleura, and pericardium—of these three serous membranes. Inflammation and deposition of pus in the lungs, liver, and spleen; inflammation with suppuration of the cavity of certain joints; and also one case with deposition of pus, in the way I have already alluded to, in the cellular substance of the interstices of certain muscles.

A patient may have *gonorrhœa*, and without our being able to observe any particular application to the eye; perhaps violent inflammation of the conjunctiva, with purulent discharge, will supervene; this may possibly be followed by inflammation of the synovial membrane of certain joints. Now these various examples of inflammation are very different to the preceding cases, in all of which we could trace the application to the inflamed part of some direct cause of disease; here we can discern no direct agency, and the only way we can account for the existence of disease is through the *sympathetic* influence excited over such parts by disease or disorder existing in some other part of the body. The reciprocal influence which the head, and organs in the abdomen, exert upon each other, form good illustrations of this sympathy, and constitute a point of considerable practical importance. When a person has received a violent injury to the head, nothing is more common than for sickness to follow, and the contents of the stomach to be ejected by vomiting. If this does not take place, the patient soon loses his appetite and becomes costive. If a person, in perfect health, receive a piece of very afflicting intelligence, it will entirely destroy his appetite. I have known a gentleman, just on the point of sitting down to dinner, enjoying the best of health, receive news of a very distressing nature, and immediately lose all inclination for food. The state of the stomach is equally capable of exerting important influence over the head. Thus it is known, that a *worm* in the stomach, particularly of a child, is capable of producing convulsions; besides this, an unhealthy state of the stomach will produce affections of the head, presenting all the external characters of *hydrocephalus*. In severe injuries of the head it has sometimes been found that the liver has been the seat of inflammation and abscess; that is, of those depositions of lymph or pus I have already alluded to. On the other hand, the terms *hypochondriasis* and *melancholia* are applied to certain cases of *mental* disturbance, and these expressions clearly show that such mental conditions have always been considered to arise from the state of more distant organs, such as the stomach and the liver. In the disturbance of the biliary system, which constitutes *jaundice*, every one knows that there is a most remarkable degree of languor and dejection of spirits.

When you consider the great extent of the digestive organs, taking the whole alimentary canal, and various parts subsidiary to it; when you consider the high organisation of those parts, the copious supply of blood they receive, and the very important functions they execute, you will not wonder at their being the seat of very important sympathies. We find, in point of fact, that almost all parts of the body are alike capable of acting sympathetically on them, and that these organs are reciprocally capable of affecting almost all other parts.

Disturbance of the digestive organs, then, is capable of affecting, sympathetically, almost all other parts, so as to produce inflammation, more or less violent. There can be no doubt, that to this source we must refer a considerable portion of those local diseases, which, in common language, are said to arise *spontaneously*—of those diseases which we cannot trace to the immediate influence of any direct cause. The digestive organs exercise the important office of preparing the supply of new materials for the repair and growth of the body, and for carrying on the various internal movements of the frame. They also remove from the body the residue of the alimentary matter, after the nutriment has been extracted from it. If healthy supplies of new matter are introduced into the frame, all the animal functions, whether bodily or mental, are carried on with vigour; the body is active, the mind alert, and a general feeling of health pervades the whole; but if the nutritive system is disturbed, if the alimentary canal is loaded with undigestive aliment and unhealthy secretions, then the materials of disease, rather than of health, are distributed over the frame, and we cannot wonder at any part of the body suffering. Any organ of the frame may be disturbed, and any mental power may be perverted under such circumstances. It is possible that in this way even character and manners may be influenced in some degree by the way in which the functions of the digestive organs are carried on. This has been perceived by some who have not made medicine the direct or immediate object of their study. At all events, the truth is illustrated with a mixture of drollery and good sense by Voltaire, in an article in his Philosophical Dictionary, entitled, "*Ventres Paresseux*," which, if it were translated into English, would be, *costive bellies*. He says, that the character and turn of mind will be greatly influenced by the state of the large intestines—by the way in which these organs perform their office. He states, that if a man is costive, his bile is not discharged, but falls back into his blood, and that this renders him choleric. This, to be sure, is not an example of good physiology, but you must understand that this was considered good physiology by medical men at the time that Voltaire wrote. He mentions that Cardinal Richelieu laboured under inward piles, which obstructed the lower bowels, and produced constipation. Owing to this, says he, the Cardinal became cruel; and thus he accounts for the sanguinary disposition occasionally evinced by this eminent statesman. He says that the Queen Anne of Austria was accustomed to call him by the name "*cul pourri*," which we cannot translate into decent English. Voltaire adds, that "if a person should have to ask a favour of a minister, or of his secretary, or of his kept mistress, he should endeavour by all means to ascertain whether they go regularly to the close-stool. If possible, he should select for the time of preferring a request the period immediately after the individual has had a comfortable evacuation, for it is a remarkably propitious moment; it is one of the *mollia fandi tempora*, which ought always to be seized—one in which a man is in good humour with himself and all around him."

Now since disorder of the digestive organs is sympathetically a cause of many local effects, and since the efforts for their cure will depend materially upon our success in discovering the cause, and in applying suitable remedies, it is necessary to inquire a little more particularly into the mode in which such derangement takes place, and into the circumstances which denote its existence.

We find, in the first place, that all kinds of serious local injuries are capable of producing, sympathetically, disturbance in the various parts of the alimentary canal. The pain and tenderness in the epigastic region, thirst, diminished appetite, costiveness, increased frequency of pulse, and hot skin, are circumstances very commonly attending such accidents; and they form the assemblage of symptoms which constitute the kind of fever produced in such cases, these circumstances being, for the greater part, immediately referrable to the disorder of parts I have mentioned. All kinds of local disease, as well as local injuries, are capable of acting sympathetically on these parts; and the disorder produced, whether by the one or the other, is capable of exciting such disturbance in the digestive organs as to protract such affections, and render their cure more difficult. A knowledge of the disorder which is produced is a considerable step towards the cure of the injury or primary disease itself. However, the most frequent cause of disorder of the digestive organs, unquestionably, is that excess of nutrition which I have already had occasion to allude to as producing plethora, and constituting a predisposition to local inflammation. The excessive supply which is introduced into the system under such circumstances is attended, in the first instance, with a more vigorous action of the different functions, and an appearance is induced of high health. In a short time, however, we find that this state is changed into a condition bordering on disease. That an individual so circumstanced has a full strong pulse, heat of skin and head-ache, and that perspirations, are easily induced on the slightest exertion; the tongue is white, and the individual is on the brink of disease, though still he is said to be in a state of health. This is a condition of plethora, or unnatural fulness of the system, which, as I have mentioned to you, may be regarded as the first step in the deviation from health towards disease. It is a condition in which disease will be very easily induced, and in which, when it does occur, it will assume a very active inflammatory nature. It is pure, simple, or common inflammation that will occur under such circumstances.

If the same cause continue to act, that is, if into the system already overloaded, fresh supplies are poured, the condition of the organs becomes altered. They are no longer able to perform their functions; they get out of order, and the individual passes from health into the condition I have mentioned. Digestion is first disturbed; chylification; absorption; and the biliary and urinary secretions become impaired in consequence. The individual now presents a state of symptoms very different to that which characterised his condition before: You find, perhaps, a foul and loaded state of the tongue; an unnatural, and frequently, a kind of voracious appetite, costiveness, and the motions, when they are obtained, are dark and unnatural in consistency and colour. The urine is scanty in quantity, high-coloured, and turbid. The skin is sallow, dark, harsh, and dry; occasionally, even an unpleasant sort of perspiration is produced from it.

Now, in the first of these two states, there is a condition of plethora from an excess of nutrition—an overfulness from the immediate effect of an improper quantity of aliment taken into the body; in the other case, there is defective excretion. The second condition is beyond a state of mere plethora; it is plethora, with defective secretion added to it. These terms may serve, in a general way, to characterise the two conditions I have just alluded to—plethora from excessive nutrition, and plethora with defective excretion. I borrow these phrases from Dr. Barlow, of Bath, a physician who has investigated a very important point of pathology, which is, the mode in which health passes into the condition of disease. He has endeavoured to find out the state which intervenes between health, and the development of disease in an obvious form; and it must be clear to you, that this is a very important consideration towards understanding the way in which disease is produced, and may be removed. Dr. Barlow has published his views in a series of papers, which you will find in the 9th and 10th volumes of the Edinburgh Medical Journal; and he has also published them partly in an essay on the Bath waters, together with some remarks on the physiology and pathology of the human frame, printed at Bath in 1822. It was only lately that I had an opportunity of seeing the writings of Dr. Barlow; and I was considerably interested in them, from finding a close coincidence between his opinions and those I had formed from other considerations. In many parts, not only are the same opinions expressed, but the very same language I have held myself is used, though I never had any communication with this intelligent author; and I was certainly pleased to find my own notions corroborated by so competent a judge as he is. I think he would perform a service to his profession, if he were to put together, in a short form, the pathological and practical views scattered through the various writings I have mentioned.

It is necessary, however, to go a little more minutely into the symptoms of the conditions we have been describing, as they appear in particular parts, and in the digestive system more especially, though it will not be requisite to detain you at any great length in doing so.

In the stomach we observe, under the circumstances I have now alluded to, that unpleasant sensations are produced after taking food; that a sense of weight is experienced, and that heartburn or flatulence is often felt. Often there is a defective appetite; in other cases there is an unnatural or excessive desire for food. Although an excessive quantity of food is taken, yet, as it is not duly digested, there is a constant desire or craving for more, which leads the individual to continue to overload the stomach. In the intestines we find an irregular performance in their functions; very frequently costiveness, and this succeeded by, or alternating with, an opposite condition, that of pain, griping and purging. Sometimes they contain an immense accumulation of fæcal matter, a large quantity of which remains for a considerable length of time, even after there had been liquid motions produced. It is by no means uncommon to find, where there are watery motions, a considerable quantity of hardened matter remaining in the canal, and not evacuated by these motions. When we regard the size of the liver, when we look at its complicated structure, and observe the peculiarity of the venous blood of the alimentary canal being circulated through it, we naturally expect to find a very great and important function executed by it. But really we are not able to state very accurately what that function is, nor can it be said that we have discovered for the liver any sufficient purpose, which so large an organ is intended to answer. It has been said, however, that the colour of the fæces depends on the admixture of the bile in the alimentary canal, therefore that the colour of the stools may be regarded as a criterion for determining whether the liver is in a healthy or natural state or not. To a certain extent, I apprehend, this notion may be correct; for we see, that when the passage of bile into the alimentary canal is stopped, as it in certain cases is, the fæcal matter is of a whitish, greyish, or clayish appearance, totally different from that peculiar brown colour, which belongs to a healthy condition or fæces. The admixture of bile, however, is not the only circumstance to be taken notice of in considering the colour of the motions. The peculiar nature of the food very often has a marked effect on this; and particular substances taken into the stomach will produce striking appearances. It is well known, for example, that steel medicine will make them black, and a person that has eaten a considerable quantity of spinach, will find that the motions are turned green by it. There can be no doubt, indeed, when we reflect on the fact, that the whole surface of the alimentary canal is a secreting surface, that the nature of its secretions, as well as the bile, must affect the colour and nature of the motions. The tongue seldom shows a natural appearance when the alimentary canal is disturbed. A foul and loaded state of the tongue, its being covered by a kind of nasty mucous deposit, is an unequivocal sign that the stomach is unhealthy. There are varieties in the appearance of the tongue; it does not always exhibit the same characters. Frequently in disturbances of the alimentary canal of long standing, it is of a yellow-brownish colour, something like buff appearance. The white state of the tongue in my opinion, is not to be regarded particularly as indicating disorder of the stomach. We see the tongue sometimes white, not from being covered by any secretion of white appearance, but as if the substance of the organ itself was rendered white. This is observed in cases either of plethora, when persons are just passing into a condition of disease, or in cases of active inflammatory disturbance of the system; and it is an indication of those states, rather than of any particular kind of disturbance of the stomach. It is a tolerably unerring criterion of the existence of inflammatory disturbance in the system, and generally it is a proof that blood may be safely taken. Whenever the functions of the stomach, liver, and alimentary canal are impaired, you must carefully examine into the state of the urine; to find if it be properly secreted, or if it be altered in quantity or in quality. It is the office of the kidneys to separate from the blood a considerable part of what we call the residue of the alimentary matter; to remove a considerable part of the food which has been carried into the lacteals, but which is not wanted for the purposes of nutrition. If the quantity and quality carried to the lacteals be unhealthy, you will have changes in the state of the urinary system: thus the urine is thick, muddy, or turbid, and a variety of changes take place which have lately been made the subject of curious chemical investigation, but we may at present take the alteration in the urine merely as an indication of the unhealthy performance of the digestive functions.

In concurrence with these circumstances, you will find the state of the skin more or less deviating from a natural condition. There is a peculiar dingy aspect of the complexion, a sallowness of countenance, a dryness and harshness of the surface of the body generally, which form a striking contrast, both in respect to the feeling when touched, and the appearance to the eye, with the naturally soft, light reddish, and slightly moist surface of the skin. That the state of the skin is an important criterion respecting the health of the animal, is a fact known to those that take care of horses. An expert groom will tell you whether the horse be in good condition by the state of his hide; and the skin of the human body affords an equally good criterion of the state of the man.

Such are the various circumstances denoting those disturbances or diseases in the alimentary canal and digestive organs, taken generally, that are the source of various local diseases—diseases which we cannot trace to any direct agency on the part affected. The conditions I have been speaking of to you may be regarded in two lights, either as states of plethora (in which point of view I have mentioned them to you), or merely as disorders of the digestive organs. The one is a more general, the other a more partial view of the same phenomena.

I need hardly observe to you that Mr. Abernethy has particularly directed his attention to the evidences of disturbance in the digestive organs, without paying much attention to the indications of plethora. He has pointed out very clearly the symptoms of such disturbance, the mode in which it acts on various parts of the body, and the means by which it may be most successfully combated. Perhaps the views given by Dr. Barlow may be advantageously combined with those of Mr. Abernethy. When taken together, they elucidate the subject more satisfactorily than either of them separately. No doubt other observers must have noticed phenomena which are so obvious and of such very common occurrence. We know, for example, that Dr. Hamilton, of Edinburgh, has published a work on the utility of purgative medicines, in which he recommends a treatment essentially similar to that which has been enforced by Mr. Abernethy. But he has taken the subject up in a practical point of view only; he has not entered into any pathological investigation, nor shown how an overloaded state of the alimentary canal takes place and causes diseases. He has shown how useful an active system of purging is in various diseases, and has particularly illustrated its efficacy in removing accumulations of fæcal matter, and preventing their recurrence. In a neighbouring country (France), the attention of the medical public has been forcibly directed to this point by an individual of great talent, but who, perhaps, may have in some measure carried his views beyond what we should regard as just limits in respect to the share the digestive organs have in causing disease. I allude to Dr. Broussais, the author of the "Physiological or Organic System of Medicine" in France. He refers to diseases of the mucous membrane of the stomach and intestines, a very great share of all the diseases that occur in the human body. At all events, in his writings we find a considerable mass of evidence, illustrating more particularly the active disturbance of the digestive organs, and this by the result of examinations after death in numerous cases. We do not enjoy here such advantageous opportunities of entering into this important business of pathological inquiry. I consider that the researches of Barlow, Abernethy, Hamilton, and Broussais, all tend to support each other. We cannot, perhaps, say that the opinions of any of these individuals are to be adopted to the full extent, but no doubt there is a great deal of truth in the statements of each, in as much as they arrive nearly at the same point, and this, too, by different modes of investigation. Their concurrence, so far as they go together, is a strong argument in proof of what they have deduced, and of the accuracy of their views of disease, both practical and pathological.

[At the conclusion of the lecture, Mr. Lawrence adverted to the case of stone, which had been examined by Baron Heurteloup, and made some comparative remarks on the process of lithotrity, and the operation of lithotomy. He observed, that the mere numerical statement of recoveries and deaths in a given number of cases, does not afford a true comparison between the two modes of proceeding; because lithotrity is only undertaken under the most favourable circumstances, while lithotomy is performed on all indiscriminately, consequently on many unfavourable cases.]

LECTURE VIII.

Treatment of Inflammation:—Bleeding.

When I spoke to you, gentlemen, in my last lecture, of the disorder of the digestive organs, or that state of the system which Dr. Barlow would have called plethora from defective excretion, I should have stated, that although the most common cause of that condition is excessive nutrition; yet that it may occur independently of such cause—without any excess, or without any imprudence in diet. It may take place in consequence of causes which act primarily on the nervous system, and which affect the digestive organs secondarily. Under this head, we may mention neglect of exercise, indolent habits, sedentary pursuits, residence in impure air, confinement in crowded dwellings, excessive mental exertion, and considerable, or long continued, anxiety or affliction. All these causes act primarily on the nervous system, and disorder the digestive organs through the medium of that system. We see many instances in females, and even in males, where this kind of disorder arises without anything like excess, or imprudence in diet; but we are enabled to trace it very clearly to influences of the nature just described.

I stated to you that considerable local injury is capable of leading to serious inflammatory disturbance in various important organs of the body; that a state of the system produced by serious local injury, such as a compound fracture, a very extensive wound, laceration, or bruise, causing the part to go into a kind of unhealthy suppuration, may create inflammation of the peritoneum, pleura, or pericardium, of the lungs, heart, liver, spleen, of various articulations, and of various parts of the muscular structure. If then such important and serious disease can arise in the parts I have now mentioned, in consequence of the very active disorder excited in the system by considerable local injury, you can easily suppose that the less violent disturbance of the frame which constitutes plethora, may be capable of producing the various local inflammations, or other diseases, which are said, in common language, to arise spontaneously, and of which pathologists have found it so difficult to explain the nature and causes.

I proceed, in the next place, to speak to you of the treatment of inflammation; adverting, in the first place, to acute or active inflammation, whether it occur with or without inflammatory fever. The view which I have already given you of inflammation, will have shown you that this is a temporary state of a part; that is, that the condition of inflammation may arise in a part, may proceed to its full development, and may then decline and entirely disappear, and leave the part in a natural or normal state, so far as regards both its structure and its function, without any treatment at all. In this respect there is a striking contrast between inflammation or common disease, and those changes of structure that occur in some specific diseases of the body—those organic changes, as they are commonly termed, such as cancer and fungus hæmatodes; for, in alterations of this nature, changes seem to be essentially destructive; they render the part quite unfit for executing its functions, and proceed till they entirely destroy the parts in which they take place. Hence has arisen the term which has been given to this peculiar kind of change—malignant. But inflammation, on the contrary, seems to have a natural tendency to terminate in a state in which the part is again left capable of exercising its proper functions. We must observe, however, that inflammation, when it is violent, dangerously disturbs, or even entirely suspends the function of the organ in which it takes place; consequently it is absolutely necessary that it should be quickly arrested, when it affects any organ of which the continued exertion is necessary to life, such as the brain, the heart, or the lungs; such as the larynx, the stomach, or intestines, and the contents of the cavity of the abdomen generally. When inflammation affects any of these viscera, it is quite possible that, if the action of the part could be dispensed with for a time, the inflammation might go through its course, and leave the organ in a state capable of exercising its functions afterwards: but the danger here arises from the want of the due performance of the function during the time that the inflammation is at its height. The regular exercise of the organ cannot be dispensed with for carrying on the purposes of life; therefore you must stop the inflammation, to prevent the effect which otherwise would be produced in the economy, by the want of a certain effect which is absolutely and indispensably necessary.

Again, the various effects of inflammation, particularly mortification, suppuration, and interstitial deposition, are capable of producing such changes in the state of an organ, as to render it, in a greater or less degree, incapable, even after the inflammation has ceased, of carrying on its regular function. Even the least important of these, interstitial deposition, is capable of producing changes in an organ which will seriously and permanently impair its action. Such instertitial deposition will thicken and harden a part; it will consolidate parts naturally loose in structure; it will unite together parts which are naturally separate, and it will render parts, naturally transparent, opaque; and these various changes may arise in consequence of inflammation not of the highest degree. When inflammation occurs in a joint, this induration and thickening may produce a stiffness of the parts, rendering the motions very imperfect. Suppose inflammation occur in the eye, or in the ear (parts naturally very delicate), a comparatively low degree of inflammation will produce such changes as will very seriously impair their functions. Suppose you have inflammation of the cornea, or the iris, or of the retina; the inflammation may go through its stages without producing any very serious local symptoms, and without producing any considerable sympathetic effects on other parts of the economy; but you will find, in the first instance, that interstical deposition will take place in the cornea, which will obscure the aperture of the pupil, and render vision imperfect; in the second instance you will find, if lymph be effused upon the iris, it will cause it to adhere to the capsule of the chrystalline lens, and thus impede or actually destroy the sight; you will find that the dark structure of the retina may be thickened and rendered opaque, and thus disabled for the execution of its proper functions; and, therefore, in consequence of these several changes, according to the degree in which they take place, the vision will be more or less considerably impaired. Suppose you have inflammation affecting the hand or foot, and that it proceeds to suppuration, the skin will be rendered adherent to the tendons, the tendons will become adherent to each other, or to the sheaths containing them; perhaps some of the joints will go into a state of suppuration, and thus the motions of the part will be seriously injured. Thus, then, though the part affected may not be essential to life, it is necessary to adopt active means to arrest the inflammation, for the purpose of preventing those changes taking place, that would subsequently interfere with the function of the part; and if you are to accomplish that, you will find it necessary to adopt means quite as active in the one as in the other case; that is, you must adopt means as powerful to stop inflammation in the hand or foot, as if it were seated in the heart, in the lungs, in the brain, or in any other important part.

Further, although inflammation should not be seated in a part important to life, and although there should be no immediate danger of any change involving the function of the organ, yet it is of consequence to arrest the inflammatory process, for this reason, that the longer the vessels remain overloaded, with the more difficulty will they recover their natural state, and the more easily will they become distended again. The continuation of inflammation, therefore, increases the difficulty of recovery, and the liability to relapse. Hence it happens that organs that have once been inflamed much more easily become so a second time; and the danger of a subsequent occurrence of inflammation is in proportion to the degree of the disease that occurred in the first instance, and to the length of time it has been allowed to go on. Persons who conduct the business of life insurance are well aware of this fact. When a person wishes to insure his life, the insurers inquire, not only whether he is healthy at the time, but whether he at any previous time has had serious disease; and if they find that he has had such disease, though he is healthy at the time, they very commonly refuse his insurance; they consider him to be an unsound man.

Fourthly, in the treatment of inflammation, we are not entirely to overlook the immediate relief of the patient from a condition of considerable suffering. In acute local inflammation, accompanied with high constitutional sympathy, this is a circumstance by no means of trivial importance. There are various active measures of a preliminary or auxiliary kind, which are of general application, aud which, though they do not immediately tend to reduce inflammation, place the patient under a state favourable for the action of more direct means. In the first place, you must remove the cause of inflammation, provided it be of a nature to allow of such removal. If there be a foreign body in contact with the surface of the eye—if a patient have suffered from the application of cold—if he have suffered from insufficient clothing, or causes of that kind, these are circumstances you can remedy. You would place the inflamed part in such a position as would be most favourable to the return of blood from it. In the case of the head, therefore, you would have that elevated; you would not allow it to lie low. In the case of inflammation of any part of the lower extremities, you would have them, at all events, placed in the horizontal position; you would have the part inflamed in a state of rest. The natural execution of the function which belongs to the organ, would be a source of considerable excitement to it when under inflammation, therefore absolute repose is generally necessary; for example, you would not allow a person to use an inflamed joint. If the eye were inflamed, you would not allow the patient to exert it. Supposing the head to be the seat of inflammation, you would not allow any mental exertion—you would not allow any attention to complicated matters, or to that which required intense study. General repose of the whole frame is equally demanded wherever an important organ is the seat of inflammation, and, in fact, horizontal repose of the entire body is very favourable to the processes which are necessary for recovery from such inflammation. We find the pulse become considerably reduced when the body is placed in the horizontal position. You would endeavour to remove all the local circumstances capable of exciting the inflamed part; all external pressure from clothes, or other sources, should be avoided. Hence a medical attendant should only examine the diseased organ just as far as would be necessary to ascertain its exact state; the pressure, and various efforts made in examination, are causes of excitement that should be avoided as much as possible. With the same view the patient should occupy a large and airy apartment; his apparel and his bed-clothing should be light, and no more than is calculated to keep him in a comfortable degree of temperature.

When we come to consider the positive means by which inflammation is to be reduced, our first view is directed to the taking away of blood. This is the most important measure by which inflammation can be attacked; blood is, in fact, the material by which the increased action of the part is kept up. If we may be allowed to use figurative language, the obvious increase of heat in the part is analagous to that of fire, and blood is the fuel by which the flame is kept up; in fact, if we could completely take away its blood from tbe part, we should be able entirely to control or arrest the increased action. Loss of blood, then, is the most powerful means for arresting the increased local action, and for quieting the general disturbance which is the consequence of this. All other means are of minor importance—this is the great remedy on which we have to depend in diminishing and removing inflammation.

Bleeding is either general or local. In general bleeding, the blood is drawn from a large vessel by a single orifice. It may be taken either from a vein or from an artery. In the former case, the process is called *venesection*, or *phlebotomy*, and in the latter, *arteriotomy*. When blood is taken from a vein, in a state of inflammation of any particular organ, we commonly find that it presents peculiar characters; that it is different in appearance to the blood that is taken from an individual who does not labour under inflammation. We find that the blood coagulates slowly, consequently that the red particles sink into the crassamentum, or clot, leaving the other part of the blood free from colouring matter; the upper part, therefore, is of a lighter appearance, and the lower part, or crassamentum, is principally formed of fibrin. We find, in inflammation, that the upper part is of a yellowish appearance; that it presents what is called a buffy colour, and, very commonly, that it contracts more considerably in the middle, than under the natural state, so that the superior surface of the coagulum is of a concave figure; that is, in common language, it is cupped. I say this is the appearance of blood when drawn from the vein of a person labouring under inflammation, and you will naturally inquire, whether it is not also the colour of blood drawn from an artery under similar circumstances? Now, the truth is, that the drawing of blood from an artery is by no means so common as venesection, and thus it is rather difficult to determine, whether the arterial blood presents the particular changes which we call the buffed and cupped state. I do not know that I myself have ever had an opportunity of ascertaining the fact; but my friend, Dr. Tweedie, has given me a statement of two instances in which he has found the blood drawn from arteries to present the same buffed and cupped appearances, which are seen in that which is taken from veins. I will just read to you the note that he has made of these cases. He says, "When I was house-surgeon at the Infirmary in Edinburgh, I was directed to bleed a patient under the care of Dr. Hamilton, afflicted with hæmatemesis (vomiting of blood): the general febrile symptoms were very severe. I attempted to take blood from the veins of the arm; but, from their small size, I could not obtain the quantity ordered. I then opened the jugular vein, but in consequence of the struggles of the patient, the orifice closed. I next opened the temporal artery, from which the blood came in a full stream. The blood soon coagulated, and, to my surprise, I found that it presented a cupped appearance. I shewed the blood to my friend Dr. Gordon, who told me that he had searched every where for such a specimen, and that he had written to the surgeons of the large hospitals in London to know if they had observed such an occurrence, and their answer was in the negative. It is now in his museum. I have since had an opportunity of observing the same thing in a patient of mine in the Fever Hospital, who was bled in consequence of inflammation of the brain under fever. This specimen has since been sent to Mr. Grainger, who has alluded to it in his work on General Anatomy."

When we speak of blood exhibiting the inflammatory characters, we allude to the two appearances I have now mentioned; to this buffy colour of the surface of the coagulum; and to the concavity, or cupped appearance of it.

In local bleeding, the blood is drawn from the capillary vessels. It is drawn from a great number of openings in the minute vessels of a part. Blood is in this way taken by cupping, or by the application of leeches; by scarifications, or by punctures. Now cupping seems to form a kind of intermediate mode of taking blood. When blood is taken by cupping, and by a person who performs the operation very skilfully, it differs but little from general bleeding. A skilful operator will take perhaps twenty ounces of blood from the back of the neck, as quickly as you will draw it from the arm; therefore we cannot suppose there can be any material alteration produced in the economy between the two. In certain instances of cupping, we cannot say the blood is taken simply from the capillary vessels. I have seen, in cupping performed on the temple, for instance, arteries divided and throwing jets of blood, three or four of them, against the sides of the cupping glass, therefore blood is then taken very quickly; and when it is taken in that way, I do not see any material difference between it and the abstraction of blood from a vein or an artery, though in one case it is called *local*, and in the other, *general* bleeding.

In this country, phlebotomy or venesection is generally performed in the arm; the blood is taken from one of the veins at the bend of the elbow, that being found to be the most convenient part. But on the Continent, venesection is frequently practised on some part of the lower extremity, particularly in veins of the leg or foot; and the physicians and surgeons of France seem to consider, that a peculiar advantage arises from taking blood in this manner under certain circumstances. They consider, for example, this practice more advantageous for affections of the head. They consider, that by performing venesection there, a *derivation* from the head takes place. This is a kind of scientific word, which I believe has not a very definite meaning; and, in point of fact, we have no direct evidence to shew, that in cases of inflammation, it is of material consequence whether we take blood from the veins of one part of the body or of another. Hence we have come in this country generally, on account of its convenience, to practice blood-letting from the arm.

Since, then, there are these two modes of taking blood, the *general* and the *local*, a question will naturally arise—What are the cases in which the one or the other is preferable; what quantity of blood is to be taken; how often should the venesection be repeated; and what is the comparative efficacy in respect to reducing inflammation, between the abstraction of blood from the arm, and the other means by which that purpose is to be accomplished?

When you hear of local bleeding, you perhaps are rather inclined to suppose, that that should be the proper mode of attempting to reduce the inflammation of any given part. You might suppose, that the best way of reducing increased action in any organ, would be to take blood from the organ itself; to take away from the organ which is the seat of excitement, the material which keeps up that excitement. You will therefore suppose, that local bleeding would be the most direct and powerful means of reducing any local excitement. This, however, would be an erroneous conclusion. You can take blood out of a part by local bleeding, but you cannot thus stop the supply of blood to that part. You can take away a portion of the blood that is in the part, but blood still continues to come to it. The consideration, therefore, is, how you can cut off from the inflamed part, the supply of blood which keeps up the disturbance in the organ; and this you can only accomplish through the medium of general bleeding. If you carry general bleeding to a sufficient extent, you can entirely stop the increased action in any part, and you cannot do that through the medium of local bleeding. Take, for instance, a patient who labours under inflammation of the chest; you have a person who has violent pain in the side, that patient is unable to distend the thorax fully; he cannot expand the chest; the inflamed organs are in such a painful state, that he cannot use that voluntary exertion which is necessary to fill the lungs with air. You find him with a hot skin, in a state of general distress, and with this inability to draw in a full chest of air. You open a vein in the arm, and take a considerable quantity of blood from it: when you have done that, you find that the reduction in the volume of circulating fluid, will enable the patient to distend the thorax with facility; he can take in a full and deep inspiration, and the general distress that existed is completely removed. This will most particularly be seen, if you carry the abstraction of blood nearly to the extent of producing fainting. You will find a change in the state of respiration almost immediately. You see the effects produced while you are actually drawing the blood from the vein of the individual; and thus you have a clear proof that that particular mode of relief is capable of putting an end to the inconvenience which the inflammation of the pleura or the lungs occasioned. Suppose you bleed a patient who labours under inflammation of the eye; there is preternatural redness of the organ, intense pain, and inability to open it against the light; it is suffused with tears; and any occasion to use it produces an overflow of these on the surface of the cheek. You take a good quantity of blood from the arm of the patient, so as to produce a state of fainting; immediately, and before your eyes—for you can see all the phenomena here—you observe that the part, which was of a bright colour, becomes quite pale; the capillary vessels of the organ are emptied: in fact, you find the patient can open the eye with facility to the light, and for a time the part has passed nearly into a natural state from one of violent inflammation. You see in both these instances, that abstraction of blood is not only capable of checking the inflammation, but, for the moment, of entirely removing it. It is true, that in both cases the inflammation will return, but it never returns with the same violence. General bleeding, then, is necessary in the case of inflammation of any organ important to life, such as the brain, the lungs, the liver, and other parts I have enumerated. This bleeding is also necessary in case of inflammation of any organ, when you suspect the probable occurrence of those changes of structure, which would subsequently impair the function of that part. Thus free abstraction of blood is necessary in inflammation of the eye, of the ear, inflammation affecting the hand generally, or any important joint of the body. General bleeding, again, is necessary in the case of any serious injury to any important part of the body, or in the case of a serious injury of considerable extent, even if it should not affect a part, in itself of consequence, because we know by experience, that injuries of that sort will produce inflammation. We know that inflammation, arising under such circumstances, will be attended with constitutional disturbance, and, therefore, the common sense of mankind, independently of medical rules, has led them to know, that a person receiving an injury of that kind ought to be bled, and that, independently of the occurrence of inflammation.

Now some persons have held it as a rule, that under such circumstances you ought not to bleed, till inflammation comes on; that you should wait till the disturbance comes on, and then take the means of removing or lessening that disturbance. I cannot, for my own part, at all accede to that opinion. We do know that, according to the laws of sporting, when a fox is turned out, or a stag set off before the hounds, they consider it necessary to give a certain time for the animal to make its way, and I believe they call that law,—giving the animal law. But I do not think we are bound by these rules in regard to inflammation. We are not bound by any rule of honour to allow an inflammation to arrive at a certain extent, before we attack it. I think we may take immediate means to prevent it, wherever we suspect its occurrence. Therefore, when a serious injury happens to one individual, more particularly if that individual be of a robust habit, and at an age when inflammation is likely to occur, we ought to adopt means to prevent that inflammation which we know, by experience, will take place, unless we do use such means of prevention. It would be a desirable thing for us to lay down a rule, if we had any means of doing so—a certain rule, by which we could determine in all cases where general loss of blood should be had recourse to, and where we should be contented with local bleeding; but I rather fancy we should be hardly able to fix any such general criterion. If the general constitutional disturbance exists which constitutes inflammatory fever, we may safely bleed generally; but, then, we cannot say that if that is absent, we should, therefore, be content with bleeding locally. There are many instances of local inflammation, which require the adoption of active means to arrest them, but in which febrile disturbance of the system is not present. You may have an inflammation of the eye which would require bleeding and the most active antiphlogistic means, yet in which there shall be no fever. We may say, therefore, the existence of febrile disturbance justifies general bleeding, but that its absence does not render it necessary that we should be contented simply with local bleeding.

Then supposing we deem it necessary to have recourse to general bleeding, what is the mode in which we should employ this operation? Are we to take a large quantity of blood, and to endeavour by such large bleeding, at once to put a stop to the inflammatory action; or are we to take a small quantity, and to repeat it? There is a difference between a considerable, and free venesection, and taking repeated small quantities of blood. Now I may mention to you, that it is more common in this country to take a large quantity of blood at once; but I believe it is more the practice in Italy, France, and Germany, to take a small quantity, and to have recourse to the operation more frequently. I have no hesitation in stating to you that, in my opinion, the most advantageous plan, because the most efficacious, is, that of taking such a quantity of blood at once, as will produce a decided effect on the state of the circulation at the moment; that is, you are to employ a large bleeding as early as you can, and this is not to be measured in its amount by any defined number of ounces. You cannot say that a person is to lose twelve, sixteen, or twenty ounces of blood, but the quantity must depend on the effect produced on the system. You are to bleed till you can reduce the state of excitement which exists in the system, and you must carry the depletion to the extent that is necessary for such purpose. It may be necessary to take twenty, thirty, or forty ounces of blood away; and if, without the patient fainting, you cannot make a decided impression on the circulation, you must go to that extent. It has often been said, you will weaken a patient very much, by taking away that quantity of blood; certainly, your object is to weaken. You consider the patient at that time too strong; that is, he has got too much blood in him, or you would not be taking it from him. Your object is to put an end to the inflammation, producing as little subsequent weakness as you can, and I think that will be best effected by a large bleeding at first. It appears to me, that when you go on taking small quantities of blood, two or three times a day sometimes, as is the case in the continental practice, you weaken the patient very much. In fact, very often, if you take a large quantity of blood in the outset, you do not want to repeat the bleeding again, nor to take any other means; but, in the other case, you go on bleeding day after day, and continue that treatment for a considerable time. I have no hesitation, therefore, in saying, according to my own experience, that the plan of repeated small bleedings accomplishes the cure ultimately at a much greater expense to the constitution than if you took away a large quantity at once. Some years ago I had occasion to attend a young female—a slender girl, in a serious attack of inflammation in the chest. I bled her not very sparingly, and adopted other antiphlogistic treatment, but I found it necessary to repeat the bleeding several times; and after a considerable number of bleedings, the inflammation was not yet satisfactorily reduced. The symptoms of inflammatory disorder in the chest continued, and I deemed the patient in danger. Still her circulation was reduced to that state in which I could not take more blood from her. I then resorted to the use of digitalis; and, either through the means I used, or in consequence of her possessing a pretty good constitution, she recovered. It happened two or three years afterwards, that I had occasion to treat her again for a complaint of this kind. She was a servant in a public institution with which I am connected, and I was requested to see her, having been accidentally at the establishment. I had previously seen her in the course of the week before this occurred. She had wanted a tooth taken out, which I removed for her, and that was attended with a great deal of swelling about the jaw and throat, so that I found it necessary to apply leeches to the parts, and to take blood from the arm. At the end of the week in which these means were resorted to, I found her labouring under symptoms of the highest degree or inflammation of the chest. Though she had been attacked only two or three hours when I saw her, the symptoms were very severe; there was excessive pain, so that she could hardly command her breathing; flushing, and great heat over the whole body; white tongue, and a highly-disturbed state of the pulse, full, strong, and very frequent; I never saw symptoms proceed to so great a degree in so short a time. The case was very favourable, I thought, for trying depletion to a great extent, I therefore bound up her arm and bled her; she was a rather slender, weakish young woman, as I have already said; yet the blood spouted out most vigorously from the opening when it was made, and then flowed very freely (in cases of inflammation when the blood runs freely, I go on till it stops, for that is the only way to do good;) and I got a large vessel, intending to make her faint, for I thought if it produced that effect upon her it would stop the inflammatory process. But, to my astonishment, she did not faint, and the blood proceeded pouring out of the arm in a vigorous stream, without running over the integuments; till at last I stopped, because the quantity taken was so considerable. I had the blood weighed, and it was found to be three pounds—that is 48 ounces. I believe it was an ounce or two more: and yet this large evacuation did not make the young woman faint. Now, that single venesection cured her; she was well from that time; all the symptoms were removed; she had no further symptom whatever indicating inflammation of the chest. She was kept very quiet for two or three days, took opening medicines, and was restricted to a low diet; but really I may say she required no further treatment but that single venesection.

In those cases in which there is sympathetic inflammatory fever, that is, in which the digestive organs are disturbed, in which the secretions are suspended, it is found that when the secretions are restored, and when the natural action of the digestive organs comes back, the fever is diminished or stopped; and thus it is said, that the restoration of the natural secretions and action of the alimentary canal, remove the fever. Perhaps it might be more correct to say, that those secretions return, because the fever is removed. However, proceeding on the analogy, many persons say, Do not bleed people who are so situated; attempt to reproduce those secretions; give aperient medicines, endeavour to make the bowels act, give medicines that will reproduce the natural discharge from the skin, and thus you will get rid of the fever. Now the truth is, if you come to read the history of cases treated in that way, you will find, that one, two, three, and sometimes four days, are employed, in efforts of this kind; purgative medicines are given, which do not act at all; diaphoretics are administered, which produce no secretions from the skin—the local inflammation goes on increasing, the general disturbance gets worse and worse, till at last, more, I suppose, by the efforts of nature than by those of the physician or surgeon, relief is obtained. Now it seems to me that the treatment of inflammation by direct depletion, appears under great advantage, when contrasted with this mode of proceeding. If you take a large quantity of blood from the system, you produce immediate and decided relief; and, in fact, you find that those points you are endeavouring to gain by medicine, and do not accomplish for a long time, are at once effected by a free loss of blood. Very frequently a free evacuation of the bowels come on after blood-letting, particularly if you induce syncope; you also find that, soon after venesection, the patient will get into a free perspiration, and that the secretions are restored from the period of your taking away the load that oppresses the circulation. When the system is relieved from that oppressive load, the natural action of the different parts goes on properly, and thus direct free repletion, accomplishes at once, that which you are endeavouring to accomplish by indirect means for a considerable time; thus, too, we materially abridge the sufferings of the patient.

A notion has been entertained, that persons who live in London, or in large cities, will not bear direct depletion, and that, therefore, the loss of blood which is proper and advantageous in the case of persons who live in the country, is improper in the case of the inhabitants of London, and persons residing in large towns. How this notion arose, or how it has happened to become so general, I really do not know, for I cannot conceive, that any idea can be more erroneous. With the inhabitants of London, and large towns, we know that all kinds of luxurious indulgences which tend to repletion are carried to the utmost extent. We know that sedentary habits, which favour such repletion, are very prevalent, and, therefore, all the habits and circumstances exist calculated to produce direct plethora—that state in which high inflammatory action will occur, and in which that inflammatory action will require the most active means. I can only say that I have constantly found in patients in London, such a state of local disorder, and general disturbance connected with it, as to require the most free use of the antiphlogistic means, and the direct bleeding I have been speaking of. I conceive, therefore, that the notion of a different plan of treatment, in cases occurring in London, and cases occurring in other situations, is totally unfounded.

Another fear has been entertained respecting the mode of treatment I have been adverting to, which is, that although it may be of efficacy in arresting the inflammatory action for the moment, the advantage is gained at the expense of subsequent debility; that the patient will be so weakened, that serious injury will be done to the constitution. Now, that is a fear of which I do not partake in the smallest degree. I do think there is great fear of violent inflammation; but my fears of debility from inflammation are, of that debility which is to be produced by the continuance of the inflammatory process—of the subsequent weakening of part, which will be produced by those changes that inflammation is capable of causing in the structure of the organ. In both these ways I think, there are real grounds for apprehension of debility; but I have seen no reason whatever to induce me to fear the effect of debility, as a consequence of the use of those means necessary to reduce such inflammatory action; and I am convinced, that the real and effective way of preventing debility in such cases, is to adopt the most vigorous means for stopping the inflammation in an early stage. It has been said, if you take blood you will bring on typhoid symptoms. The words typhus, and typhoid symptoms, have been a complete bugbear in medicine. Typhoid, and typhus symptoms, merely denote the state of the individual in whom certain organs are in a state of disease, and in whom such disease has gone to a considerable extent. Typhoid symptoms are by no means a necessary consequence of inflammation generally, they merely denote a certain result consequent on disease existing in a certain set of organs, that is, in the nervous system. The only fear then of debility in the case of inflammation existing in the body generally is, from allowing the inflammation to proceed unchecked, till it produce those changes of structure which will subsequently impair the function of the part.

LECTURE IX.

Treatment of Inflammation;—Antimony—Mercury—Diet, &c.

Local bleeding, gentlemen, may be employed with advantage when the inflammation has been checked, and when the sympathetic effects produced by it have been removed by the general loss of blood; or it may be sufficient alone, in cases of a less serious description. In taking blood locally, our choice lies between two means; cupping, and the application of leeches; for scarifications and punctures are applicable only to a few cases, so that they are not to be spoken of as general means of local bleeding. Cupping is the more efficacious of the two means, for we can succeed in getting a larger quantity of blood by this method; it is also drawn more quickly, and we can get a definite quantity. There are, however, certain parts of the body, where cupping would be improper, and where the application of leeches are convenient. There are also certain states of inflamed parts, in which, on account of the pain that would be produced, cupping cannot be practised; here, likewise, we must have recourse to leeches. And I will observe to you, that to be really efficacious, leeches must be employed in greater numbers than is generally done. Speaking of the adult, I should say it is seldom worth while to apply a smaller number than ten or twelve, and the number may be increased, under particular circumstances, to two or three dozen or more.

You will not, I trust, gentlemen, misunderstand the observations I have made respecting bleeding, so as to suppose that I recommend local bleeding in all cases. There are many slight inflammations, in which it is not necessary to take blood either generally or locally; and there are others in which the local abstraction of blood answers every purpose in conjunction with other means. You must consider, in particular instances, the importance of the affected part, the degree of disturbance it labours under, and the probability that the continuance of the inflammation may produce changes of structure that would seriously impair the function of the part. You must also take into consideration the age, the constitution, and the habit of body, of the individual; and you must regulate your choice of means, by a combined view of those various particulars in such instances.

Certainly, when it is your object to check inflammation suddenly, either on account of the importance of the organ, or from the apprehension of such changes of structure as inflammation very frequently produces, you will, in my opinion, find it advantageous to employ general bleeding—to employ that in a free manner; that is, to take a large quantity of blood at once, and to repeat the evacuation speedily, if the first does not accomplish the purpose. I am well convinced you will find this not only the more effectual way of arresting inflammation, but the mode of accomplishing the purpose with less ultimate expense to the powers of the constitution, than if you were to adopt what at first might appear to be a milder and more sparing use of the lancet. Indeed, I think there can be no comparison, if we look to the debility produced by continued high inflammation of a part, and the continued constitutional disturbance which high inflammation of an important organ is capable of producing on the system, and the debility that is produced by a considerable loss of blood at once. You will see patients much more weakened, if you allow disease to go on, than if you were to cut it short by active treatment. In fact, it is by no means uncommon, on the day after active means like these have been used, to find a person capable of his usual active exertions, supposing the inflammation to have been arrested by the depletion. We know, on the contrary, how long people remain ill, how protracted their convalescence is, if inflammations are allowed to run on, as they often are, for several days and weeks.

I do not know that there is any one circumstance, or combination of symptoms, on which we can rely as a criterion or index, for pointing out when bleeding is proper, or what quantity should be taken. Certainly the pulse will not afford that criterion. If it be full, strong, and hard, you can have no hesitation about bleeding—the indication is clear. But you sometimes find the pulse low and oppressed, particularly in inflammatory affections of the head. Sometimes you have a small pulse, being, at the same time, hard or wiry, as in inflammatory affections about the abdomen or bowels. As this then will not afford a certain criterion, you must look particularly to the local symptoms, that is, to the state of the part affected, and the condition of its function; and when you find in that evidence of disturbance, you must then freely employ the lancet, although the pulse should not, in point of fulness and strength, indicate the necessity of it.

It has been said that the existence of the yellow covering on the concave surface of the crassamentum of the blood, may be deemed a criterion for venesection. We may perhaps allow, that where these appearances are seen, they justify us in continuing to take blood, more particularly in concurrence with other indications; but we often find it necessary to continue the loss of blood, although it does not exhibit these inflammatory characters.

I have had occasion to notice the whiteness of the tongue as a symptom indicating the loss of blood to be necessary. It may be well to look to this in cases of inflammation, and not to regard it merely in reference to the state of the stomach and intestinal canal alone, but as it respects she system at large.

It is not sufficient, in the treatment of inflammation, to diminish the quantity of the circulating fluids by the loss of blood; you must also prevent the introduction of further supplies into the system by the use of purgatives and the regulation of diet. You employ purgatives, in the first instance, to clear out the alimentary canal, to remove whatever is contained in it, and this, in general, produces considerable relief to the patient. For this purpose you give a good dose of some active aperient medicine, calomel, probably, combined with the extract of colocynth, with jalap, or with rhubarb, quickly followed by an aperient draught of the infusion of senna with salts and manna, or a dose of castor oil. In that way you get rid of whatever is contained in the stomach or intestines. You then continue to administer what are called the neutral salts in small doses, so as to keep up a continual discharge from the surface of the mucous membrane of the stomach and intestines, and this must be considered a very powerful means of reducing inflammation. On some occasions a large—a very large quantity of watery discharge is produced from the alimentary canal; but this is not surprising when we come to consider the great extent of surface presented by the stomach and intestines. The quantity of fluid so evacuated is very considerable; yet you will find persons go on giving purgatives for a great length of time, and to a great extent, who, nevertheless, are afraid of taking away a few ounces of blood from the arm. I have seen a particular purgative medicine, the elaterium, administered, in dropsy, to a person so weak, that nobody would have thought of taking five or six ounces of blood from the arm; I have seen this medicine given to that person every second or third day, and producing, by measure, four, five, or six quarts from the bowels on each day on which it was given. Now, when purgative medicines are given in such a way as to produce discharges of this kind, you cannot doubt that they have as great an effect in lessening the quantity of circulating fluid, and in diminishing the powers of the system, as a mere taking of a few ounces of blood from the arm can have.

We are probably to regard the effect of purgatives, when they are administered in a judicious way and at short intervals, not simply as lessening the quantity of circulating fluid in the system, by the large secretions produced from the surface of the mucous membrane, but also as operating by another process, which I shall have occasion to advert to presently, that of counter-irritation. You produce a determination of fluids to a large part of the capillary system, and thus you probably diminish the circulation in the part which is the seat of inflammation. Emetics, which are occasionally given in inflammation, probably act in the same way; they are not to be regarded as acting merely by what they expel from the body, but also with regard to the excitement they produce in the vascular system.

In cases of inflammation, the diet must be particularly attended to; it should consist chiefly of fluids, and those of a diluent or slightly mucilaginous or acidulated character. Simple water, toast and water, barley water, apple water, lemonade, or tea; such is the diet for a patient labouring under a serious local inflammation, with concomitant febrile disturbance of the system. When the case is not so serious, with tea a little toasted bread or biscuit may be allowed, and ripe fruits or roasted apples.

Loss of blood, purging, and abstinence—these are the three great means of reducing inflammation; but there are other auxiliary measures. In the first place, with respect to the increased heat of the surface of the body, one is naturally led to an attempt to reduce that; the heat and dryness of the skin are circumstances very troublesome to the patient. We find that if perspiration comes on, the febrile affection of the system is lessened; and hence we attempt to imitate that natural course of events, and to relieve inflammation by administering medicines that promote secretions from the skin. Nitre, and the medicines which are called saline; the liquor ammoniæ acetatis, and alkaline salts neutralized with lemon-juice, or the citric acid, have been called refrigerants, or cooling medicines, as they are supposed to take away some of this unnatural heat. But the most powerful medicine to act on the skin is antimony, more especially two preparations of it, James's powder and the tartrate of antimony, or emetic tartar, and of these two, the latter is certainly the most powerful. Emetic tartar does not merely act on the skin, but, according to the amount of its dose, either excites perspiration, nausea, or sickness, and purging. In all these points of view, therefore, it must be regarded as a very powerful agent in combating inflammation. If the tartarized antimony be given for the purpose of producing perspiration, a quarter of a grain every four hours will excite it, and keep up a state of nausea;—half a grain produces sickness. When it is thus given in sufficient doses, you will find the action of the venous and arterial system greatly reduced by it, and perhaps there is no better mode of doing this, particularly when its use has been preceded by the more powerful means of bleeding,. The pulse is exceedingly reduced in number and force under the state of nausea,—in fact, so reduced, that the patient is brought, as we say, almost to death's door. This is particularly seen in the case of persons who go on board ship; they are violently sick—what is called sea-sickness—they lose all power, and lie as if they were dead. In this way, then, emetic tartar acts, by directly checking inflammatory action, and there are few individuals strong enough to resist it if administered for a sufficient length of time.

Of late, this medicine has been used in larger doses than we have been accustomed to give it in, more particularly by the Italian physicians, who have observed the powerful effects it has in combating inflammation; and they have accordingly classed it among those medicines which they call contra-stimulants; the word contra-stimulant being pretty similar, if not exactly, to our technical term of antiphlogistic. Contra-stimulant, gentlemen, is a Latin phrase, which signifies that which is opposed to, or designed to check stimulus; and inflammation being the result of stimulus, it therefore means that which reduces or lessens the cause of inflammation. Antiphlogistic is derived from the Greek, φλογιξω, to burn,—to inflame, and therefore means the same as the Latin, that which is opposed to or designed to check inflammation. This medicine, that is, emetic tartar, is made use of by the Italian physicians, not in grain nor half-grain doses, but to the extent of a scruple, to a drachm and a half; and, they say, it does not in these quantities cause either vomiting or purging, and though frequently the first does so, yet after this the stomach receives it without repugnance, and in many cases it reduces inflammation without producing any evacuation, either from the stomach or bowels. I have in many cases tried its effects in this way, by giving a grain and a half, repeated every two hours, and after eight or ten doses I have increased it to two grains; and in these instances I have found its effects to be as above described. In many cases of inflammation, particularly of the chest, and in violent phrenitis, its exhibition in this way has saved the loss of blood to a very great extent.

There is another remedy of considerable power in the treatment of inflammation, although it acts quite differently from the tartrate of antimony, and that is mercury, more especially calomel. It has long been ascertained by general experience, that the free exhibition of calomel, after direct depletion, has a very favourable effect in expediting recovery, and in preventing those changes in structure, which inflammation frequently produces. This is a matter that has been observed generally, without much attempt to explain it, or to reason upon it. Thus we may say, that after the free employment of the lancet, after evacuating the alimentary canal, and after using those general depletions I have mentioned, calomel may be given in doses of two, three, four, or five grains, and repeated every six or eight hours, till the patient has taken some considerable quantity of it. It has been observed, particularly in instances where the calomel thus administered has affected the mouth, that perhaps the progress of recovery has not been at all retarded, but rather accelerated. If this general observation be well founded, that is, if calomel administered in this way has the effect of preventing changes of structure, and thus expediting recovery, it is of course a very interesting matter to inquire, how these purposes are accomplished?

Now in the exhibition of calomel in inflammation, for instance, of the iris, we can see the mode in which the medicine acts: the inflammation is accompanied with effusion of lymph on the inflamed membrane. We see calomel, more particularly if we carry the use of it to the extent of affecting the mouth, very speedily arrests this deposition of the lymph, and that what has been deposited, becomes quickly absorbed! When I speak of calomel, of course I mean to speak to you of the action of mercury generally, for I do suppose, in fact we know, that the effect is not confined to that particular form of the remedy. Here, then, is clear evidence that it is by arresting the formation of lymph, and promoting its absorption, that these effects are produced. There is another case in which the use of calomel has been found to be very advantageous, and that is in that peculiar form of inflammation in the larynx and trachea, which is accompanied with an effusion or lymph, forming an adventitious layer of substance on the surface of the inflamed membrane. It is not improbable then, that mercury may possess this general power of controlling that action of the capillary vessels on which the effusion of lymph depends, and thus of preventing the changes of structure which follow inflammation. This, however, is a point which remains open for future observation.

The means that I have now described, taken altogether, constitute what is called the antiphlogistic treatment, or the antiphlogistic plan, which merely means the treatment or plan calculated to counteract inflammation—the treatment or plan opposed to inflammation. And when we speak simply of the general management, more particularly of the diet, we call that the antiphlogistic regimen.

Although it may be stated generally, that local applications are of much less importance in the treatment of inflammation than general means, yet they are often very useful auxiliaries; they at all events, in many instances, produce a comfortable effect to the patient's feelings, and therefore, we employ them, even if only for that purpose. The increased heat of a part has naturally led to the employment of cold. When a person has a part of the body, or the whole frame, preternaturally hot, you would expose that part of his person to the cold in order to afford relief. We find, indeed, that the application of cold to the human body has a very powerful influence in checking increased action. In the case of wounds, people are in the habit continually of employing cold to check bleeding; in fact, by applying intense cold for a considerable length of time, we cannot only reduce vascular excitement, but stop vascular action altogether. Various applications, then, have been made use of to the inflamed part, for the purpose of reducing this increased temperature. These consist of liquids, technically called, lotions or washes. They are used by taking a soft piece of linen, three or four times folded, dipping it into the fluid, squeezing it out, so as to have it damp, laying it on the part, and moistening it frequently. The effect of these applications, probably, does not depend so much upon the mere circumstance of their being lower in temperature than the part to which they are applied, as their being used in such a way, as that the fluid may be evaporated from the surface of the part. You are well acquainted with the fact, that evaporation is a very powerful mode of producing cold, and thus when a moistened rag is laid on a part and exposed to the air, evaporation goes on of the fluid contained in that rag, and thus the temperature of the part with which it is in contact, becomes considerably reduced. Hence the washes or lotions used for this purpose, in reference to the particular mode of their application, are called evaporating lotions; and it is of importance when you attempt to reduce temperature in this way, that you should see the liquid is so employed as to admit of evaporation. If you leave a person to apply a wash himself, he will, perhaps, apply a rag dipped in it to the part, cover it over with a handkerchief, and then lay it under the bed-clothes. Now it is obvious that evaporation cannot go on there, that the rag soon becomes of the same temperature with the part, and the limb is kept in a sort of warm bath. For the purpose of producing cold in this way, cold water may be applied, iced water, vinegar and water, or rose water. Very commonly, what is called the saturnine lotion is used. This was heretofore considered a very powerful remedy, and its effect in reducing inflammation, was referred to the sedative property of the preparation of lead, which it contains. We continue to use the saturnine lotion, or Goulard's wash, as it is called, from its original maker, although we do not believe that the lead has any such effect as was ascribed in it. Sometimes alcohol, or ether, is added to the fluids that are used for washes, in order to increase the evaporating process. Spirits of wine, rectified spirits, or the liquor ammoniæ acetatis, may be employed in conjunction with rose water for a lotion, making an agreeable and pleasant smelling lotion: two ounces of either of these, to six or eight ounces of the rose-water. When we wish to reduce the temperature of the part still further, we apply ice to it, roughly powdered, and wrapped in a cloth, or put into a bladder. Such application is, of course, at a temperature of 32 degrees; and if this be kept on until it is melted, the effects are very striking, particularly when applied to the head, in cases of determination of blood to that part. If we apply cold spring water in a bladder, and renew it, we shall find that the temperature of the head will soon be much reduced. Even when considerable excitement exists, the patient will begin to find the cold very uncomfortable, and wish it to be removed; in fact, it soon produces such pain that he cannot endure it longer. An aged patient requires warmth; and there are many instances where warm applications are found more beneficial, as well as more comfortable to the feelings of the patient, than cold ones, and we are of course accustomed to accommodate the remedies employed, as much as we can, to their feelings and wishes. For this purpose we use warm fomentations, as flannels dipped in warm water, sometimes in medicated water; these being laid upon the affected part, and renewed as required. When fomentations are applied to a considerable surface of the body, as the chest, and decoction of poppies or camomile flowers are employed, they may be put into a rough towel, and laid upon the part. They will thus produce warmth and general perspiration over the whole frame. There is no invariable rule which we can lay down for the choice of warm or cold applications; but we may say generally, that cold is best in superficial inflammation and in the incipient state; but when it is fully developed or seated under the surface, not in the skin, warm applications are best.

In the account of local applications, you will find a greater variety of substances than I have now mentioned; thus emollient, narcotic, and unctuous substances are recommended for the purpose of producing changes in the parts to which they are applied. I believe that none of these substances act in the way they are supposed to act. I do not know that there is any direct means for softening the skin, for instance: and the narcotics, or indeed any medicine of that kind, can have no sort of effect, as long as the cuticle remains entire. It is true, opium will act through the cuticle, if it is powerfully rubbed in; but such things as are employed under the term narcotics, such as some herbaceous infusions in warm water, are not capable of producing any narcotic effect whatever.

It is observed in the animal economy, that when a new disease is produced, the one which existed previously, very generally becomes considerably diminished in its extent, or frequently entirely disappears. If a person has a violent inflammation of the urethra or bladder, and the testicle becomes inflamed, the inflammatory symptoms generally disappear from the urethra. If a child has a serious inflammation of the eye, and the ear becomes sore and breaks out, the eye will get well. It has been attempted to imitate this process of nature by producing an artificial new disease, in order to lessen that which already exists; and this principle is called *counter-irritation*. Sometimes it is called *revulsion*. Counter-irritation means merely, opposed or opposite irritation; that is, an irritation opposed to that which exists. Revulsion is from the Latin word *revello*—to draw away—under the notion that the new inflammation of parts forcibly draws away that which previously existed. Derivation is sometimes applied under a similar notion. Derivation means—draining off in a stream. Thus when leeches are applied to a part, they are said to afford a derivation; that is, to draw off the fluids from the inflamed part to the outlets, which are produced by their application. Thus counter-irritation, derivation, and revulsion, are words of analogy, meaning pretty much the same thing, and that which is most commonly accomplished by means of what we call blisters. But they are not the only means of accomplishing the purpose. It has, of late, been proposed by Sir Anthony Carlisle, to produce the effect intended by means of a piece of metal dipped into water of a given temperature. You know that the application of boiling water to the skin, will blister just as much as the ointment made with the Spanish fly. The *liquor ammoniæ*, when applied in its pure state, will produce blistering; and either the liquor ammoniæ, therefore, or boiling water, may be applied, when you want to produce the effect instantly; for the action of a blister, with a Spanish fly, takes some hours. In order that we may have a chance of reducing existing diseases by this means, it is necessary that the new irritation be more powerful than that already existing. In a case of active inflammation in its full development, which has not been checked, the disease cannot be stopped by blisters; they will only add to the irritation, and increase the patient's suffering. Blistering, then, is not to be employed while local irritation is at its height, but after depletion and the other means already described have mitigated the local disturbance, this will assist in its removal.

Blisters, then, may be applied when inflammation has continued some time, and when you suspect it is going into the chronic stage. It has been said, they are also applicable when you wish to recall inflammation towards a part in which it has previously existed, but which it has quitted, in order to fix in some other place; such examples of removal of the disease you find occurring chiefly in gout and rheumatism. It may be doubtful how far this principle can be rendered of practical utility. In such cases, that is, if the inflammation of gout or rheumatism should have passed from external parts to internal organs, you will, probably, find it is best to attack the inflammation vigorously in its new quarters, rather than to attempt to entice it back to its old seat.

The means I have now particularised are to be continued and repeated, until the inflammation is subdued. A milder course of treatment may be pursued afterwards, until the natural state of the organs return.

But it will be necessary still to pay attention to the bowels and diet. Mild opening medicines should be administered, and the diet should be light, and in small quantity. Patients place a considerable part of their delight in eating and drinking; and when they have been for some time deprived of this pleasure, they wish to get back to it, and recommence stuffing as soon as they can. They have a longing after the "flesh-pots;" and the medical man often seems to think the enjoyment of them to be as important as does the patient himself. But it is very important that this should not be allowed, as it frequently occasions tedious convalescence, and often causes relapses. Dr. Baillie has stated, that almost all relapses in cases of inflammation may be attributed to a premature return to the ordinary habits of eating and drinking.

If you treat a case of acute inflammation according to the principles I have laid down, you will find you get rid of the disturbance in the part; that the part recovers its natural state, and never passes into the condition of what is called *chronic* inflammation, chronic inflammation being merely a protracted inflammation—an inflammation that has lasted some time. If, however, inflammation be treated more inertly, if persons are very much afraid of debility, afraid of letting out a little blood, and thus let the inflammation take its course and have full play, it will very frequently happen, after the acute symptoms are gone by, that you get a case of what may be called chronic inflammation. We cannot, invariably, say, that the existence of such a case would prove that an inflammation had been treated badly, but it affords a strong presumption.

In other instances, inflammation is chronic from its very beginning; that is, it is marked by less active symptoms than those belonging to acute inflammation, and we are to consider what is the treatment appropriate to this form of disease. Now, although chronic inflammation is not marked by the same activity of symptoms, and although it does not exist in an equal degree of sympathetic disturbance in other parts, it is still essentially the same process as that of acute inflammation; it is only a difference in degree, and must, consequently, be treated on the same principles. The treatment of chronic inflammation therefore, will, except in degree, be the same as that of acute; it is merely a modified degree of the treatment I have described;

inasmuch as the local symptoms are less violent, and the sympathetic disturbance slight, or not existing at all; it is not so necessary to take blood generally as in acute inflammation; but the general abstraction of blood is by no means inapplicable or unnecessary; on the contrary, it is often necessary in the disease which must come under the technical head of chronic. We see many instances of chronic inflammation, that have not been very actively treated, where we can take blood from the arm at the end of some weeks, or even some months. Take the case of a person of a plethoric, or robust, habit, with chronic inflammation of an important organ, such as the head or eye, and then the loss of blood is frequently not only advantageous, but we may say necessary. It is often necessary, occasionally, to take blood in moderate quantities in those states of plethora which I have mentioned as constituting the remote or predisposing cause of so many local diseases, and where such states of plethora have not actually proceeded to the extent of exciting inflammation in any particular organ. The abstraction of blood, in small quantities, is often very beneficial, even where there is not much disturbance. Where there is a white tongue, we attempt to remove disturbance in the digestive organs; we give purgatives, and cannot remove it; but if we take a small quantity of blood from the arm, we shall remove it at once. The local loss of blood is frequently necessary in chronic inflammation by cupping or leeches. Counter-irritation is very frequently necessary, and here we attempt a more active mode of producing it than is adopted in acute inflammation. We do not so commonly employ blisters, but usually more considerable means of irritation. We excite the peculiar irritation of the skin in the neighbourhood of the part affected, and this is produced by rubbing upon it the tartrate of antimony. By mixing finely-powdered tartrate of antimony with lard, in the proportion of one part of the tartrate of antimony to three parts of the lard, you form an ointment, and by rubbing a small portion of that upon the part, night and morning, you produce a peculiar inflammation of the skin, which develops a large quantity of pustules, that are in one stage not much unlike the small-pox eruption. *Setons, issues, moxæ*, are other modes of effecting counter-irritation.

The regulation of the digestive organs is a matter of considerable importance in the treatment of chronic inflammation; here, in the first place, as in the acute, you clear out the alimentary canal, and then have recourse to such means as would insure the regular action of the bowels without producing purging. There are a great many medicines which have the effect of purging, but in different cases we must select those which are most applicable. In such cases as we speak of, the neutral salts, at short intervals, will suffice, as we do not want in chronic inflammations to reduce the powers, but merely to obviate that disturbance in the system which the retention of fæces would occasion, and to prevent accumulation. There are substances which act particularly upon the large intestines, such as aloes and colocynth, which we call *Eccoprotics*, from εκ and κοπρος, dung, or medicines which clear out the dung. These, in moderate doses every day, or every other day, are to be employed, and with them may be combined mild mercurial medicines, for the purpose of altering the state of the secretion in the alimentary canal. We see that when the colour of the fæces is unnatural, the exhibition of mercury, in small doses, alters it, through some effect upon the liver. Calomel, or blue pill, with compound extract of colocynth, or extract of rhubarb, are useful. Calomel is one of the best remedies, in small quantity, for this purpose; and, therefore, it is the basis of a number of quack medicines, under the names of *stomach pills*, *dinner pills*, &c., which are nearly all composed of calomel in conjunction with aloes.

When the tongue is very foul and loaded; when the discharge from the bowels is very unnatural in its colour, dark, slimy, and pitchy, frequently at the same time nausea existing, or perhaps an unnatural or voracious appetite, it may be necessary to exhibit an emetic in order to clear the stomach, or at all events, if you do not do that, it may be well to administer antimony in a small quantity in conjunction with some other medicine. Under such circumstances we may exhibit two or three grains of calomel with the same quantity of James's powder made into a pill with the compound extract of colocynth at night, and a dose of the infusion of senna and salts in the morning.

Common experience has shown the advantage of combining different purgatives, although we cannot altogether explain this advantage. We do sometimes give those medicines singly, but very often we find it useful to combine them. We find that a combination of several of them will produce the beneficial effects which they are not capable of producing singly; and this is accounted for by our acquaintance with the fact I have mentioned, of the purgatives producing their effects in various ways. After clearing the alimentary canal, it may be expedient to administer mercury, in what is called the alterative form; that means, the administration of mercury, calomel, or blue pill, in small doses, and continued for a considerable time. Five grains of the blue pill, or Plummer's pill, or a grain, or two grains, of calomel may be administered in this way at bed-time, every second night, and some aperient medicine should be given some time in the course of the day. I have mentioned to you, that aloetic medicines are good in these cases, and in conjunction with mercurial medicines you may administer the compound decoction of aloes, with infusion of rhubarb. When given in the middle of the day, or a little before dinner, it gently excites the stomach, at the same time that it acts on the large intestines.

In elderly and debilitated persons, you should generally select that class of purgative medicines that are called warm; and one of those I have mentioned is a very good one, namely, compound decoction of aloes; it used to be called the *baume de vie*. The tincture of rhubarb, combined with the tincture of senna, also forms an eligible combination of purgatives of a warm kind.

It is absolutely necessary, in the treatment of these cases, that you should carefully attend to the diet. I can assure you I consider it just as necessary to regulate the diet, as it is for you to determine the medical or surgical treatment; in fact, if you content yourselves in the treatment of disease in prescribing medical or surgical means, and leave the patient to do just what he likes in point of diet, in the great majority of cases you will be beaten. He will do himself more mischief by what he puts into the stomach, than you can do him good by all your surgical or medical researches. During the existence of inflammatory disease, all fermented liquor is improper. Animal food should be taken only in small quantities, and at stated periods, and even then it is fit only in the milder forms of inflammation. Tea, gruel, broth, milk, bread, and the various farinaceous articles, and vegetables, these form a kind of diet which is intermediate between the low diet of fever and the full diet, which may be safely taken by persons in health. When the local excitement is completely stopped, and when the general disturbance has ceased, when the tongue is moist and clean, when, in fact, the patient is well, then he may return to common diet, but he must not do so before.

Such, then, are the means dietetic and medical of removing the remote or general causes of local disease in that numerous class in which they are found to arise spontaneously, or are said to come of themselves. When, however, the nervous system has been considerably weakened by great mental exertion, by sedentary habits, by residence in bad air, or by the other depressing influences to which it may be exposed, you must do something more than adopt the means I have just described. You must resort to some means for strengthening the system, for bracing it, and restoring its energy. I am afraid you will not find such remedies in the *materia medica*. There are tonics and stimulants, there are medicines of this and medicines of that class to be found in abundance, but I believe there are three things which do not belong to the *materia medica* that I may mention, with reference to the particular point under consideration, and which very far outweigh any of the articles to be found there. These are, residence in pure air, exercise of body, and tranquillity of mind.

LECTURE X.

Inflammation;—Pathology and Treatment of Fever.

In speaking, gentlemen, on the subject of local applications to inflamed parts in the last lecture, I omitted one class of those to which some persons attach great importance, that is poultices—one of the means by which warmth, or rather, warmth in combination with moisture, is applied to inflamed organs. I believe we are only to regard these as means of applying a certain degree of warmth to the part, and they are only valuable, inasmuch as they contribute in certain cases to soothe the local pain which patients experience in inflammations. We cannot ascribe to them any great virtue in arresting the inflammations. If patients are rendered for some time easier by their application, it is as much praise as we can probably ascribe to them. The ordinary forms of poultice are those made of crumb of bread, or of linseed powder, respecting which it may be necessary to take care that the poultice be rendered very soft—that there should be nothing harsh, no dry fragments in it—that it should be altogether soft, so as to be applied easily to the part. I fancy no particular effect is produced by medicating poultices in the way frequently proposed; neither do I rely on their "drawing" as they are supposed to do; they are only to be regarded as soft, warm applications.

In speaking to you of the means which are to be adopted in order to correct that deranged state of the digestive organs, which must be considered as a remote cause of many local diseases, I should have observed, that frequently after the employment of aperient medicines, by which the alimentary canal has been sufficiently cleared out, the weakened state of the stomach, requires the addition of mild aperients and subsequently of tonics. Thus we administer, in such cases, columba, gentian, cascarilla in combination with rhubarb, or the alkalies, soda, potass, or the subcarbonate of ammonia. I had occasion to mention to you, in speaking of the choice of aperients, that those which are of a warm nature, are advantageous, and that rhubarb, with aloes, for instance, of equal parts, are particularly recommended; the infusion of the former with the compound decoction of aloes, and taking a draught of that kind once a day, or twice a day, if it should be necessary.

I also spoke to you, in the last lecture, of the employment of mercury as a remedy in inflammation, after the previous use of evacuations, for the purpose of preventing those changes of structure which the interstitial deposition connected with inflammation so frequently produces. The same treatment is to be kept in view in chronic inflammation; and, without adverting to the mode in which the effect is produced, common experience has led medical men to regard mercury as having great power in removing chronic inflammation in a part. Indeed, in certain instances, we see considerable enlargement of parts got rid of by the employment of mercury. This is particularly obvious in the case of the testicle. There are certain inflamed enlargements of the testicle, the result of simple chronic inflammation, and which the use of mercury, carried to the extent of producing some effect on the system, speedily dispels, after they have been there for some time; and no doubt the same is applicable to other chronic enlargements in other parts of the body.

When individuals have been the subject of disease already, even although that disease should be put a stop to, it is of great importance to adopt such measures as may prevent its recurrence; hence the regulation of diet is a matter of consequence after disease is at an end, and the principles which are applicable to that consideration, are of course of equal importance to the healthy, as a mode of preventing the occurrence of disease at all. I imagine we may lay it down as a general rule, that the best thing for health is, for persons to work hard and to live temperately; unluckily this is very opposite to the natural disposition of mankind, who are much inclined to be temperate in work, and to live hard, that is, to eat and drink a great deal. I remember hearing that a gentleman of large fortune, a strong robust man, went to consult the late Dr. Gregory, of Edinburgh. He had recounted a great many ailments, all of which could be referred to this sort of indulgence; and he ended by entreating, that the doctor would consider his case attentively, and tell him what would make him well. The doctor said that he understood the case, and could tell him at once what ought to be done. "You ought," says he, "to live on sixpence a day, and to work for it."

I think it may be stated in general, that about three times a day is often enough to take food. People should take three meals a day, at periods of about equal intervals, and certainly, animal food and fermented liquor should not be taken more than once a day. It is true that persons who perform a great deal of laborious exertion—those who take a great deal of exercise of any kind—those who live a great deal in the open air, are capable of bearing a more stimulating diet, and they continue to enjoy good health under it. But the generality of mankind will consult their health most effectually by confining themselves to the use of animal food and fermented liquor at their chief or dinner meal only.

It is desirable for you to know the mode of diet that is fittest for students. The truth is, that considerable employment of the head is attended with an excitement of the brain; and when the brain is thus excited by its proper occupation, it will not bear the additional stimulus of animal food and fermented liquor. You must all know that a hearty meal of animal food, with beer and wine, produces an obvious temporary excitement of the head, accompanied by redness and throbbing of the arteries. A person actively employed in studies of any kind, cannot, in general, bear animal food twice a-day. The rules of temperance, on the whole, may be considered as rather more strict in reference to persons who are employing themselves in the way alluded to, than as regards the generality of mankind.

I have mentioned to you the general disturbance which accompanies local inflammation, under the name of sympathetic inflammatory fever. The Latin word *febris*, which is derived from *ferveo*, to be hot, and the Greek word *pyrexia*, which is derived from πυρ, fire, both denote the most obvious character of it, namely, increased heat, with which increased frequency of the pulse is combined. These two circumstances, increased heat and increased frequency of pulse, are found in different states of the body; that is, in states which differ from each other in other respects. The excitement producing increased heat, and the increased frequency of pulse, may be combined with various other disturbances in various other parts of the system. Hence it has been found impossible to establish any definition, or to give any short description of fever, which shall comprehend all the ailments included under that word. It is, indeed, useless to make the attempt; for, in many cases of fever, the distinct seat and nature of disease are still matters of doubt.

Now fever, taken in its original and in its most obvious acceptation, as denoting increased heat of the body, is merely the name of a symptom, and not of a disease; and in this sense we find it is originally used by Hippocrates and the earlier writers, who, in describing local disease, and enumerating its conditions, speak of it as attended with πυρετος or fever—speaking of fever as a symptom of local affection.

When any important organ is actively diseased, we find that general vascular excitement is combined with the symptoms proper to that organ; and thus, frequently, the name of the affection embodies these two circumstances. People talk, in common language, of brain fever; and really it is by no means a bad name—disorder of the brain connected with fever; catarrhal fever, rheumatic fever, symptomatic fever—these are names of a similar kind. We do not say pneumonic fever, enteritic fever, and so forth; but we give professionally to these affections a name merely denoting the original seat of disease.

When we are ignorant of the local causes which produce the symptoms I am now considering, that is, the increased frequency of pulse and increased heat; or when we regard them as arising without any such cause, we call the case idiopathic fever; and the French call it *fièvre essentielle*—essential fever. The term idiopathic fever conveys this meaning, that the fever is immediately produced by the causes of disease; and thus idiopathic fever would be contradistinguished from sympathetic, where the original cause of disease produces an affection of a certain organ, and the affection of that organ causes the febrile disturbance. In the same way, the French phrase of essential fever, imports, that the fever, that is, the general disturbance, is the essence of the complaint. In the other case, the affection is termed symptomatic or sympathetic fever. That is, the disturbance of the circulation is regarded as an effect or symptom of a previously existing disease in some part of the body.

Now, with respect to this distinction of idiopathic and sympathetic fever, we should observe that the existence of the former, as a distinct class of disease, is not yet clearly ascertained. Heretofore, fever has been regarded merely as a general affection of the frame; but, in proportion as the researches of morbid anatomy have been more accurately conducted, it has been found that this general disturbance owes its origin to some local disorder; and hence, of late years, more particularly in France, where pathological researches are conducted under peculiar advantages, it has been argued by some of the most distinguished physicians, that there is no such thing as essential or idiopathic fever, as a general disturbance of the system, independent of local affection, but that all diseases are the conquence of some local irritation, disorder, or inflammation. ou will understand, in considering this point, that when ver is said to depend on some local inflammation, the word used in a general sense, to denote not only the state of a art in which there is swelling, redness, and heat, but the mi-or degrees of disturbance which are marked merely by simple fflux of blood, or by derangement of functions.

Now when an organ in any part of the body is irritated, disordered, or inflamed, sympathetic effects are speedily produced n various other parts; and these, taken together, constitute a tate of fever. If you have an inflammation of the brain, or of ts membranes, that local disturbance is attended with fever. f you have an inflammation of the pleura, or of the lungs, ou have also fever attending it; and the same observation will hold good with respect to the peritoneum, the liver, the tomach, the intestines, and the kidneys. If you have an ac-ive inflammation of any of the larger organs of the body, there s fever; or even of a considerable portion of the skin, as in rysipelas. In all these cases, the nature of the affection is ery clear. There is an obvious local cause; and the dependance of the general or febrile symptoms on that local cause is uite unequivocal.

There are other instances in which the local disease is not marked by circumstances so obvious, in which the general sympathetic disturbance is the more prominent circumstance. It attracts the attention more than the local disorder that has caused it, and thus the original local disorder might escape notice, unless the case were very attentively investigated. Our examination after death often detects the existence of primary local affections. This is an observation that holds good in many instances, where either the brain or the alimentary canal are the primary seat of disease. All disorders of the brain that may produce febrile disturbance of the system are not characterised by strongly-marked local symptoms; and, in the same way, there are slighter symptoms of disease in the alimentary canal that might escape notice, unless scrutiny be made. Again, there are other cases in which we can observe no local affection during life, but in which, when we come to examine the parts after death, we sometimes very unexpectedly find serious and local disorder, where we have not really suspected the existence of it.

Now, if we put together the cases that may be arranged under the heads I have just mentioned, we shall find that there is a distinct and recognisable local cause in forty-nine cases out of fifty of fever; or, probably, we should be safe in saying, ninety-nine out of a hundred; still we occasionally see instances in which we cannot trace such a local cause. We may see a person exposed to cold, taking cold, having shiverings come on, and having general disturbance of a febrile character, where we cannot trace the existence of any inflammation. What then are we to infer from this view? That such cases make an exception to the general law? May we not rather suspect, that we do not yet sufficiently understand them, and that we ought to mark them down as subjects for more minute investigation?

It appears to me that, to establish the existence of fever as a general disturbance, independent of local causes, it would be necessary that we should have a history of the case from day to day, so as to give us the opportunity of observing, whether the symptoms pointed out any particular local cause or not; and then that we should have an account of the dissection, with a description of the state of all the various organs of the body, whether sound or otherwise. And when we had got materials of that kind, if we found cases in which febrile symptoms have existed during life, but in which there was, on examination after death, no kind of local disorder, we should admit such as instances of idiopathic fever.

Idiopathic fever, however, gentlemen, belongs to the consideration of the physician, and not of the surgeon. The nature, the causes, and the treatment, of the cases which either belong, or are supposed to belong, to that head, are considered in the writings of physicians and in medical courses of lectures. I shall only observe to you, therefore, that, as far as I know, the nature of the febrile disturbances which are treated by the surgeon, does not differ, essentially, from that of those which come under the care of the physician. We frequently see, as a disturbance symptomatic of local disease, a kind of fever, which, if it were contemplated by a person without the knowledge of the existence of that local cause, would be called a typus fever, for instance. It is necessary, consequently, for you to avail yourselves of all opportunities of gaining information on these subjects from the writings and lectures of physicians.

Sympathetic fever does not present itself to our view under similar circumstances in all cases; it exhibits varieties in its character, which may be referred to the age of the individual, to the temperament, to the state of the constitution, to the habit of body, to the climate, to diet, to the mode of life. In the first place, certain cases of sympathetic fever are particularly marked by disturbance of the sanguiferous system, by a full, strong, and hard pulse, considerable heat of the body, and so forth. This constitutes the sympathetic inflammatory fever which I have already had occasion to describe to you, as attending serious local inflammation, and it is the synocha of Cullen.

It is not necessary for me to say more to you on this subject, for the observations I have already made to you respecting the treatment of inflammation, include the treatment of this affection. We regard it only as a sympathetic effect of serious local inflammation, and the means we adopt, in order to remove local inflammation, are equally efficacious in the sympathetic disturbances consequent on that local cause.

In other instances, the digestive organs are the parts principally affected; and such cases constitute what some writers have called gastric, or bilious fever. I imagine that to this head we may refer what has sometimes been called mucous fever. Tenderness or pain about the epigastric region, great thirst, nausea or sickness, complete loss of appetite, or a coated and foul state of the tongue, and a variety of symptoms that are referable to disorder of the alimentary canal, are the circumstances principally characterising that form of sympathetic fever which may be called gastric or bilious.

Now Broussais refers the cause of all fevers to the state of the alimentary canal; thus common continued fever, typhus fever, the yellow fever, the plague, and, in fact, all varieties of fever, with him are caused by gastritis, or enteritis, or gastro-enteritis. He regards all these as disturbances immediately originating in inflammatory disorder of these parts. There can be no doubt that the alimentary canal is the original seat of the disturbance in a great many cases of fever; and, in fact, in cases that run through their progress and terminate fatally, diseased appearances, of a very marked kind, are commonly found in the alimentary canal. A considerable proportion of the whole of the patients who are examined after death exhibit appearances of this kind. During the past year, at the Fever Hospital, I find, by two or three notes with which my friend Dr. Tweedie has favoured me, that of sixty fatal cases, twenty-four had diseases of the mucous membrane of the intestines, and that fifteen of those showed ulceration of some part of the alimentary canal. These are two specimens (exhibiting the parts) of disease of the mucous membrane of the small intestines which Dr. Tweedie has sent to me. In one of them you will see numerous ulcerations of the mucous coat, while, in the other, one ulcer has penetrated through the peritoneal coat. He observes that, in this case, adhesions to the neighbouring parts had prevented the escape of the contents into the belly, but, usually, where an ulcer penetrates through the peritoneal coat, it is followed by death within four-and-twenty hours, for the contents of the alimentary canal escape through such openings into the abdomen.

Now several writers who have described gastric or bilious fevers, have laid it down as a rule of practice, that our attention should be directed simply to the state of the digestive organs; that calomel should be administered combined with or followed by purgatives; and that loss of blood should be avoided; that the latter measure will be injurious; and that, in all cases having the bilious character well marked, you should not think of bleeding. I cannot, for my own part, at all agree with that view. There is a great proportion of cases of this kind, in which the disturbance of the digestive organs will be most speedily set right by the loss of blood, in which you would spend a long time in the administration of calomel and aperients without recovery from the disorder, and in which venesection will, perhaps, set all right very speedily. Certainly these cases may not require so active an employment of the lancet as those that come under the first definition, where the sanguiferous system is principally disordered, but the use of the lancet is by no means to be omitted in them. The exhibition of an emetic, when the tongue is foul and indicating an unhealthy condition of the stomach or alimentary canal, is often advantageous.

Now Broussais holds quite a contrary opinion, as to purgatives, from that which I have mentioned; he states, that the administration of purgatives, in cases where any thing like what he considers a state of inflammation of the mucous membrane of the stomach and intestines exists, is the worst of all possible practices; in fact, he completely exhausts the vocabulary of abuse against all persons who purge their patients in such cases; he says, it increases the irritation of the mucous membrane, and that it produces these ulcerations. I think we may agree with him, that if considerable pain exists about the alimentary canal, we should prefer taking blood from such patients before we commence the use of purgative medicines; but I must say, most distinctly, that I have in no instance seen those injurious effects he talks of, produced from the use of purgatives; and I do consider that there is not a particle of evidence to show, that ulceration of the mucous membraue is produced by the administration of purgatives. I happened to see a fever case which terminated fatally, where the head was principally affected, and where, after early depletion had been practised, purgative medicines were administered very freely throughout the whole of the case. I think the patient did not die for about a fortnight from the commencement of the disease, and during the whole of that period he took purgatives, which kept up a discharge from the bowels, and, in particular, he took a great deal of calomel, which is one of the remedies Broussais regards with abhorrence. I examined the body after death; and having seen the remarks of the French pathologist, I thought it a very favourable instance to show whether purgatives were really capable of producing all the bad effects which have been ascribed to them. On examination, I found the mucous membrane of the stomach and alimentary canal throughout perfectly healthy, there was not a single speck of ulceration throughout.

It happens occasionally, that the stomach rejects aperient medicines, or, indeed, any other kind of medicines you may put into it, and probably this may arise from a determination of blood to the mucous membrane—from what may be called inflammation of that membrane. But so much benefit is derived in all cases from getting the alimentary canal unloaded, that I think it a great object to introduce purgative medicines; when, therefore, great irritability of the stomach exists, we should administer such medicines as are active in small compass. Calomel is one, and the croton oil is another of those medicines. They may be administered under such circumstances, and the evacuation of the bowels by means of glysters may be attempted.

There is a third form of sympathetic fever, in which the head is principally affected—in which the symptoms are referable to disorder existing in the head, and show themselves either in various painful sensations connected with that part, or in the condition of the external senses, or in the various mental faculties, or in the condition of the muscular system, particularly in the greater or less degree of imperfection of voluntary power. This constitutes the nervous fever of the old English writers; and probably it is to this state to which the term we so frequently use, typhus fever, is applicable; although that term is not a very definite one, it is the ataxic fever of the French. This phrase merely means disorder, and I fancy it has been employed to express the considerable disturbance and irregularity of those functions which are carried on by the nervous system. When a febrile attack of this kind has lasted some time, when it is considerably advanced, and more particularly if no active means have been used to prevent its progress, the symptoms assume a particularly serious and dangerous appearance. The oppression of the nervous system, the want of power over the muscles, the muscular tremors and agitations, the great and serious disturbance of the digestive organs, indicated by a brown and dry state of the tongue, accompanied by a collection of sordeas about the teeth and lips; these present a collection of symptoms which have given rise to the term malignant or putrid fever. The patient then goes into a state of debility, and hence arises the adynamic fever of the French, which may be considered as equivalent to fever from debility—want of power. Such are the terms which are used to designate the advanced stage of fevers which originate in affections of the head.

That a considerable portion of cases of fever have their origin in the head, I think no one who has attended to the phenomena of these affections can entertain any doubt. Dr. Clutterbuck has entertained the opinion, and defended it very ably, that the head is the seat of disorder in fevers generally. His work on fevers you will find very well worth your perusal. It contains very rational and very ingenious views, both of the nature and of the treatment of the affection, and well deserves to be read, although we may not agree with him in the rather exclusive view he takes of the subject, in referring fever entirely to affections of this part of the system. I cannot entertain a douht, for my own part, that inflammation, or disorder originating in the stomach or alimentary canal, may excite, sympathetically, febrile disturbance of the system, as well as inflammation or disorder originating in the head. However, we may really leave these two gentlemen, Dr. Clutterbuck and Dr. Broussais, to settle the matter between themselves; the one places the seat of all fevers in the head, the other in the alimentary canal. These extreme opinions are often useful in conducting us to the truth; they lead to the investigation of facts, and thus from the comparison of these, as brought forward by men who have investigated the same subject under different views, the truth is ultimately ascertained.

There is here a specimen of a brain taken from a person who died of fever, which will show you the kind of vascular congestion which may exist; the determination of blood which may take place to the brain in cases of fever. This is from a person that was admitted into the Fever Hospital in the fourth week of the disease, and who died within thirty-six hours after admission. You observe (showing the brain) that the whole external surface of the brain has become of quite a bright crimson colour, from excessive injection of the vessels of the organ. Dr. Tweedie says, that of six hundred cases treated, last year in the Fever Hospital, one hundred and twenty-two had well-marked symptoms of affection of the brain, and thirty-three equally well well marked symptoms of abdominal inflammation. I shall just make a slice into this, that you may have an opportunity of seeing the state of the internal vessels. This has been taken out a day or two, so that you do not see it under very advantageous circumstances, but still you will find numerous bloody points throughout; the clearest marks of strong vascular excitement.

In these cases the antiphlogistic treatment is necessary in the commencement of the affection, while there are distinct and clear evidences of congestion in the head, and symptoms of debility, which have not yet come on. With a view to prevent the occurrence of that subsequent stage—with a view to avert what may be called typhoid symptoms, a treatment of some activity that will remove the inflammatory disturbance of the brain in the outset is of great consequence. If the commencement of such cases be treated with such activity, those alarming symptoms of debility will not take place at all. Venesection may be necessary, as well as the local loss of blood from the head, by cupping or leeches, aud in those cases where disturbance in the head is strongly marked, the local application of cold is very important. I mentioned this slightly in the last lecture. It is in such cases that the head should be shaved, that you should apply cloths out of cold water, or ice water, and that you should place on the head a bladder three parts filled with spring water, or with ice, frequently changing and renewing it. There is another mode of applying cold to the head, which Dr. Tweddie has been frequently in the habit of resorting to, that of pouring jugsful of cold water from some height upon the head. Let the head be hung over the bed, have a pailful of cold water and a common ewer, and pour several jugsful over the head from as high as the patient can bear it. It has a very marked effect in diminishing heat, and frequently does so, when medicine and depletion do not seem to control the symptoms. You frequently find the feeling of heat and disturbance much lessened by it, and the patient will often, after it has been done, fall asleep and break out into a sweat.

In the protracted stages of this affection, it is important to consider when, and in what way, we might be justified in the employment of cordials or tonics. The muscular debility which often takes place in those cases at an early period, and which is an evidence, not of general weakness of the frame, but of that oppressed state of the brain, which diminishes the voluntary power over the muscles: this muscular debility has frequently led to the employment of tonics, stimuli, and wine, even in comparatively an early period of it; and no doubt, the injudicious use of such means has very frequently tended to aggravate the disease, and to bring on serious typhoid symptoms. There are instances, however, in which the patient is reduced to such a state of debility, that there seems no alternative except to administer wine, or wine and water. It is very often a subject of doubt, whether we do any good by such administration; for, when we come to examine patients after death, when we find a state of brain such as you there see, (pointing to the brain on the table), or any serious disorganization of any other part, we cannot suppose the wine, or wine and water, can have had much tendency to remove those affections. There are some instances, certainly, where the cautious administration of wine seems to produce benefit at the time, and all I can observe to you is, that you should carefully watch the administration of wine, brandy, or any stimulus of that kind. You give it just to answer a particular purpose, when you see a patient in an alarming condition of debility, and if the patient rallies a little, then you should discontinue it. It will not do to let a patient go on for four-and-twenty, or eight-and forty hours taking wine; if he were to do so you would find probably a very injurious effect. In this state of debility these stimuli produce a much greater effect than they would do in a healthy person. The wine must be given, therefore, very cautiously, and the effect must be carefully watched. I had the curiosity to ask Dr. Tweedie, how much port-wine they used in the course of the year at the Fever Hospital—and they take in a great many cases there in a state called the typhus; they receive a great many cases in which that state exists in its worst form. He told me the consumption of wine, he believed, did not exceed two or three dozen bottles per annum. So that their experience there has not led them to place great dependance on it.

Under the head of irritative fever, a state has been described which is merely, in fact, an advanced stage of this nervous or typhus fever. In a serious local disease, or a serious local injury, which has gone on very badly, where the febrile disturbance has been progressive, and the high excitement still goes on in the very worst form, that particular form of symptoms has been called irritative fever; but it is merely the last stage of the fever I have just mentioned, and there is nothing peculiar in it.

Fever dependent on, or the consequence of local disorder or disease, may have an intermittent character. There are some cases in which you have regular paroxysms of intermittent fever.

LECTURE XI.

On Suppuration, Formation of Abscess, and Treatment.

Suppuration, gentlemen, is the formation of the fluid which is called *pus;* it is one of the effects of inflammation; therefore, wherever we find pus, we are sure either that there is, or that there has been, inflammation of the part. Pus is a whitish or yellowish fluid, varying in consistence from that of thick cream to that of water; and it is found, on microscopic examination, to consist of globules floating in thin fluid, in that respect bearing some analogy to the constitution of the blood. The difference in consistence, and in the other properties of pus, depends chiefly on the nature and on the degree of the inflammation, and on the structure of the part in which it is formed. Pus is sometimes thick and homogeneous; sometimes it is curdy, flaky, or clottish; that is, it consists of parts that are thicker, swimming, or contained, in a thinner fluid; somtimes it is serous or watery; sometimes it is viscid or slimy.

I have spoken to you of suppuration as an effect of inflammation; but the formation of pus is not confined to the circumstances which were then explained and alluded to. Pus may be formed on the denuded surface of the skin, for example, after the application of a blister. It may be formed on the surface of inflamed mucous membrane, and that of inflamed serous membrane, and that of inflamed synovial membrane. It may be formed on the surface of wounds, and of ulcerations; and, lastly, it may be formed in consequence of inflammation in the interior, or in the substance of various organs; and when pus is thus formed, the collection of fluid which it constitutes is called an abscess.

An abscess, therefore, consists of a collection of purulent matter in the interior of any part of the body, excepting, however, the regular or normal cavities; for when pus, or any other kind of fluid is deposited in them, we call it an effusion, and not an abscess.

Inflammation, as I have already informed you, varies very greatly in different instances, in the violence of its symptoms, and in the rapidity of its progress; sometimes going through its course within a very short time, at others occupying a very long period; and the formation of matter, or suppuration, partakes, in this respect, of that variety of character which is observed in the inflammation that produces it. You may have pus completely formed, an abscess fully developed, in the course of a very short time, that is, in the course of two or three days for instance; or you may have the collection increasing and remaining in the part, without coming to a head for several weeks or months, or even, perhaps, years. We might, therefore, designate suppuration as we do inflammation, by the terms acute and chronic, and, in fact, we speak constantly of chronic abscess, though we do not exactly use the term acute abscess; we more generally talk of phlegmonous abscess, to denote those collections of fluid which are produced by the most violent and rapid forms of inflammation.

I shall first, then, speak to you of the progress of inflammation as it occurs in phlegmonous abscess. When the inflammation has proceeded to a considerable degree, matter is deposited in the centre of the inflamed part. The inflamed textures, as I have already mentioned to you, become in some measure softened, or, at least, their power of cohesion is lessened by the progress of inflammation. This change goes on to its utmost extent in the centre of the inflamed part, where pus is secreted; and, in fact, portions of the textures actually lose their cohesion. They may be said to be broken down; and when this effect is produced in the textures of the part, there is effusion into them from the inflamed vessels, at this period, of a thin serous appearance, something like a bloody effusion. When I say that there is a portion of the textures of the inflamed part broken down, and that then there is effusion from the inflamed vessels, I do not allude to any mechanical process, but to a change of condition, the result of violent action. We now begin to perceive white spots of matter disseminated here and there, in the part which is the seat of the greatest action, and these soon unite, so as to form one cavity. The cavity which is thus formed, enlarges; it increases in size, pushing aside the cellular substance and the surrounding soft parts, which yield more or less, according to their nature. Now such of these parts as are firm and resisting, do not give way at first to the process I have mentioned. Blood-vessels, nerves, tendons—these form elevations or ridges on the sides of the abscess, and sometimes they constitute a sort of frænum or bridle to the abscess, crossing from one side to the other.

The surface of the cavity, when we examine it, is found soft and pulpy, and it presents a greyish appearance. If we take the handle of a knife, we can scrape off a pulpy, greyish substance, which is generally supposed to consist of the coagulable lymph effused by the inflammatory action. It appears, indeed, not organised, although it closely adheres to the surface of the part. When we thus scrape off this grey pulpy covering, we nd that the interior of the abscess presents the appearance of dense texture, that has been compared, and not very inaptly, that of a mucous membrane. It is reddish in colour, firm, ompact, and tolerably uniform in structure. This kind of embranous structure constitutes what we technically call the alls or parietes, the sides, the sac, or the cyst, of an abscess. n fact, if this part, with the matter it contains, were dissected ut, the abscess would then present a bag or cyst. The inter-al surface of this cyst is in contact with the matter which the bscess contains. To the external surface, the surrounding ellular membrane, and other parts in which the abscess is ormed, are closely adherent, being condensed—rendered pre-ernaturally firm in texture by the inflammatory process. This ondensation extends to a greater or less degree around the abscess, until it gradually passes into the natural textures of the urrounding parts. In the early stage of the formation of pus, here is a considerable portion of this condensed or hardened urface surrounding the cyst of the abscess; but in proportion as the collection of pus increases, the surrounding hardness becomes less in extent. The parietes, or walls, or cyst of the abscess, are obviously caused by a condensation of the cellular texture of the part, in consequence of the effusion of lymph into it under the inflammatory action. The inflammatory disturbance which proceeds to the length of suppuration in the centre of the inflamed part, produces the effect of interstitial deposition in the circumference. In the language of Mr. Hunter, the inflammation in the centre is *suppurative* inflammation, and the inflammation in the surrounding part is *adhesive* inflammation. The cyst, which is thus formed, constitutes a natural barrier, which contains the pus which insulates and separates it from the surrounding textures. If it were not for this barrier, the pus would be disseminated in the cellular structure round the part in which it is deposited, and, like serum in anasarca, might pass extensively over the whole of the limb for example. The condensation of the cellular texture around the inflammatory process, prevents this extension, which would otherwise take place; it confines the change to the part in which it has immediately occurred.

The pus, which is contained in an abscess formed under these circumstances, is thick, homogeneous, and generally of a whitish colour. When I say it is thick, I mean it is equal in thickness to the thickest kind of cream, and sometimes, in fact, it is more so, coming near to the consistency of a soft solid, such as *butter*. Generally speaking, the higher degree of inflammation, the thicker the pus which is produced by it. This is the kind of pus pathologists have called *good pus—laudable* *pus;* that is, the kind of purulent secretion which is produced by a high degree of inflammation occurring in a healthy individual. That, no doubt, must be the reason which has given rise to the term of—good laudable pus. The thick and uniform pus, found under these circumstances, is found to be heavier than water; so that if it be received into a vessel of water, it falls to the bottom; and that has been considered a criterion to distinguish between purulent and mucous secretion. A very great deal of trouble has been taken to establish a criterion of difference between the two; for, under certain circumstances, it becomes a matter of importance to consider whether a fluid is a suppurative fluid, or a mucous secretion. Unfortunately, however, no very distinct criterion of difference has yet been found in animal chemistry, between the thick creamy fluid found in an abscess, and the ordinary exhalation of mucous membranes. Generally, there are such obvious differences, that we are not in any want of a minute criterion; but we are to recollect that, under inflammation, those membranes which secrete mucus, come to secrete a fluid which is afterwards very like pus. And I believe there is no certain test by which it can be discovered, whether a certain animal fluid is the natural product of a mucous membrane, or of the suppurative process of inflamed vessels; that is, there is, I believe, no certain test by which we can distinguish pus from mucus. Mucus certainly floats in water generally, instead of sinking to the bottom as pus does, but this is by no means constant. Now the mucus secretion which takes place from the bladder, sinks to the bottom of the chamber-pot in the urine, though the urine is a great deal heavier than water. Mucus is ropy, slimy, and viscid, while pus does not present any thing of this character. But, then, when we view the gradual progress of the inflammation by which mucus sometimes assumes the character of pus, we become still more puzzled, in the application of a criterion for discovering the difference.

Pus is secreted from the surface of the cavity which contains it—secreted or exhaled. Heretofore an opinion has been entertained that pus is produced by a breaking down of the natural textures of the part; this idea, no doubt, having arisen from the existence of the cavity that is found in a part where the suppuration has taken place. You see a large excavation, and the first impression is, that the pus contained there has consisted of the natural textures that before filled the cavity, which, by some strange process, have been reduced to the form of pus. Again, it has been supposed that pus is formed by some stagnation or putrefaction of the fluids of the part. It has further been maintained that pus can only be formed in consequence a process of ulceration; and thus when pus has proceeded om any of the mucous cavities having external outlets, it has en supposed that ulceration existed in those parts, to account r the discharge of the pus. All these notions, of course, ave vanished, in proportion as correct physiological observa- ons have prevailed, and in proportion as minute examinations ave been instituted after death; and though, even not many ears ago, several controversies existed on these points, they e now so completely settled, that it is not worth while again revert to them.

It has been further supposed, in order to produce a fluid ossessing all the characters of pus in their full development, hat a certain process of elaboration is necessary; that is, that he fluid is deposited in a part, first in a certain state, and that undergoes changes which gradually bring it to pus; and this ems to be countenanced by the term maturation, or ripening, sed by the old writers. Now the fact is, that pus is secreted once; there is no passing through changes; there is no ela- ration which brings it into that condition, except so far as gards the *first* process; for then, as I mentioned to you, there an actual separation of the part, in order to form that cavity which it is deposited. The fluid first secreted has a serous, and metimes a bloody character, though afterwards we find, in he same part, the secretion possessing all the characters I have cribed to you as belonging to pus. This only applies, how- er, to the commencement of the process; and in the same ay in the instance of denuded skin, and also of inflamed ucous membrane, we do not find that the fluid first secreted, as all the ultimate qualities of pus. A serous fluid is first oured out on the inflamed skin, and that is gradually changed nto a fluid containing globules, which constitutes pus. There a similar change from the colourless viscid secretion of rous membrane to that of the thick purulent secretion, which roceeds from mucous parts. In some instances we see ap- earances which lead one to suppose there is really something ke giving way, and breaking down of the parts in which ppuration takes place. Now, some time ago, I had a patient this hospital, who had been sent from the Fever Hospital, in hom an abscess had formed in the hip; I made a puncture, nd allowed it to discharge. As it ran out it appeared to me look partly like oil; and I saw, when it was poured into the essel, that it consisted of well-formed pus, and a good deal of il. After the opening had discharged for a considerable time, found something obstruct the flow through the aperture; I aid hold of that, and taking it away, I found it to be a con- iderable portion of *adipose* substance of the part that had been floating in the abscess, and the oil which came out had been, no doubt, contained in the adipose cells.

In the case of suppuration of certain glands, there is an obvious admixture of the substance of the part with the pus; this is the case, for instance, with respect to the liver, where part of the substance is found in the pus, giving it what is called its *hepatic* appearance. The pus is of a kind of yellow hue, derived from the colour of the texture of the liver.

The surface, then, of the abscess secretes the pus which the abscess contains, and it is also capable of absorbing, or taking up again the fluid which it has deposited; it is a secreting and absorbing surface; hence we may regard the cyst of an abscess as a kind of new organ developed in the body.

Symptoms.—With regard to the symptoms of suppuration; when inflammation has been of a violent kind, when it has been rapid in its progress, when there has been considerable pain, and that preternatural throbbing which characterises it, we may expect that suppuration will occur. The actual formation of matter in the part is characterised by a remission of the local pain; the pain becomes less severe; it seems frequently to stop altogether; soon, however, a kind of dull aching sensation, a sensation of weight, occurs in the part; there is a sense of tension, and in cases of the formation of matter, a kind of pulsation—a pulsation synchronous with that of the heart, takes place immediately before the formation of matter; and during the time it is forming, it is not uncommon to have rigours or shiverings, and these have generally been regarded as one of the most certain signs of matter in the abscess. Now the truth is, that matter frequently forms without the occurrence of rigours, and rigours often occur when no suppuration takes place; there is no necessary connexion between the occurrence of rigours and suppuration. Rigours occur in most of the spontaneous inflammations of the body.

The most unequivocal evidence, however, of matter having formed in a part, is the soft feel which the presence of matter communicates to the hand of the examiner. When you come to feel the part, you are sensible that a fluid exists in it; and if you feel it with your two hands, making a pressure alternately with the one and the other, you find that the fluid can be perceived moving from one side to the other, and that it thus imparts the sensation of what is called fluctuation. It is often a matter of consequence to ascertain whether matter is formed or whether it is not, and hence we frequently have to examine the part very carefully in order to discover this point. It is difficult to describe sensations, and I do not know that it can be done; I can only say, you will be able to ascertain the kind of ling that is communicated by the presence of matter by ac- ally examining parts where suppuration has taken place.

When matter has formed at some depth from the surface, of urse it becomes difficult to ascertain the fact. When you are amining a part, in which the point is very doubtful, it is not, rhaps, so well to place the fingers of the two hands upon it, d to press alternately with them, because you often, in this ay, produce a kind of impulse from cellular infiltration; but you place the fingers of one hand upon the part, let them main at rest, and make pressure with those of the other, and you feel a fluctuation against the fingers at rest, you ay pretty safely conclude that the formation of matter has curred.

When suppuration has taken place, the cavity of the abscess tends itself in all directions. It becomes larger and larger, d in this extension we observe, of course, that it enlarges ost readily in those directions in which the resistance is least. enerally speaking, therefore, the cavity of the abscess tends enlarge towards the external surface of the body, because, that direction, there is the least resistance to its develop- ent; or it tends to increase towards the surface of any of the ucous cavities or canals of the body. This progress of an scess, however, towards the external surface of the body, or wards any of the natural mucous outlets, does not depend mply on the circumstance of there being less resistance in ose directions, for abscesses will take either of those courses, en although there should be much less resistance to their ogress in other directions. Supposing abscess, in fact, takes ace in the parities of the abdomen or chest, and that the seat the abscess is nearly on the external surface of the serous embrane of either cavity, the matter will, in the majority of stances, pass through the muscular parities of the chest or domen, *externally*, although it may be covered only by e thin serous membrane in the other direction. And so, nerally, however deeply an abscess may be formed, and vered externally by parts thick and unyielding, the obvious ndency of the process is to a removal of the parts that are tuated between the collection and the skin, and consequently bring the matter to a discharge externally, either through the tural external surface, or into some of the mucous outlets of e body. In the progress of the abscess towards the external rface, there is a gradual removal of the parts which intervene etween the collection and the skin. Here, therefore, a new rocess takes place. So far as we have hitherto seen, we have ppurative inflammation producing the deposition of pus in e cavity of the abscess, and adhesive inflammation consolidating the textures which surround the abscess, forming a barrier to limit and insolate it from the surrounding parts. But another, and quite a different process, is necessary, in order to bring the matter to the external surface. You must have a regular removal of the parts which intervene between the abscess and the surface; and you find that those parts are regularly and progressively removed, so that the external coverings of the abscess become thinner and thinner, and the feeling of fluid becomes more and more obvious; the fluctuation, as it is technically called, is more easily perceived. As this process goes on, the swelling in the circumference of the abscess becomes reddened, and, at the same time, the central portion where the sense of fluctuation is perceived, swells more considerably, raising up a sort of prominence of the skin; that prominence often assumes a pointed form, and we then begin to see the part at which the abscess will break. This is the stage of the process which is technically called the pointing of an abscess. When the matter approaches to the surface, the skin becomes red, tense, and shining. As the skin becomes thinner and thinner, this redness becomes deeper in tint; it assumes a livid hue. Lastly, the skin ulcerates, and then the matter escapes at the opening. If the *cuticle* covering the ulcerated part of the skin be very thick, as in the palm of the hand, or the sole of the foot, you will find that the matter will elevate the *cuticle*, that it will often separate the *cuticle* extensively from the *cutis*, and thus, though the cavity has given way, the pus is not discharged externally; but when the *cuticle* is raised in this manner, it ultimately gives way also, and then the matter escapes. At first a certain quantity only escapes at the aperture thus made, for the opening formed by the ulceration of the skin, is, in general, a very small one; but as much escapes through it as relieves the tension, and the patient is considerably relieved from the pain he has before experienced. The sides of the abscess contract in consequence of this diminution of the quantity of its contents. When a fresh quantity of pus has been secreted, it again flows out at the opening, and the size of the aperture becomes larger: it progressively increases, so as to allow the whole to drain away. The sides of the abscess again contract, the aperture becomes smaller, it cicatrises, the part heals, and thus a natural cure takes place.

Sometimes, however, in parts where motion is constantly occurring, and also in some places where we do not accurately observe the condition of the part, the cavity of the abscess does not become completely obliterated; it is reduced to a small extent, but still there is an external opening, from which matter escapes, and we find that that leads into a small tube of arious extent in different instances; that small tube, which is he remains of the abscess, and the external opening through which the matter is discharged, constitute what is called a *istula* or *sinus*. *Fistula* means merely a tube or pipe.

Treatment—I have next to consider the treatment of an abscess of the kind of which I have been speaking to you. I have mentioned to you, that the sides of the abscess are capable of absorbing, as well as secreting of pus. We may, therefore, conclude, that if the process of inflammation could be completely put a stop to, the pus contained in an abscess would be aken up by the absorbents, and thus that a natural cure of the abscess might be effected without the matter being discharged at all. In this way, sometimes, abscesses are cured, without either their bursting or being opened. It is, however, not a very frequent mode of cure, and certainly, as a general rule, we may say, that when matter has formed in a part, it either must be discharged by the natural process I have now mentioned to you, or be let out by a surgical operation.

I think the most frequent examples of cure of abscesses by absorption are afforded in cases of venereal bubos, and in those formations of matter in the neighbourhood of the groin. There is a young woman at present in Magdalene's Ward, in this hospital, in whom a considerable portion of matter formed in a bubo has been absorbed. She came into the ward with a venereal sore, of about the size of a sixpence, on the inside of the labium, and a bubo in a state of suppuration. The skin was of a bright-red colour, and very thin; the bubo must have contained at least an ounce of matter, if not more. In fact, the skin was so red and thin, that I thought it should be opened; and I do not know what circumstance it was, that led me to postpone the operation on that day. When I saw this patient on the next visit, it did not appear larger in size, it did not give her much pain, indeed it was rather easier, and I did not then open it. The next time I saw her, it appeared evidently to be going away; the skin covering it was wrinkled, the enlargement was less, the redness seemed gradually to be diminishing, the fluctuation became less obvious, and now the matter is entirely removed. The treatment has consisted simply in keeping the patient at rest; she has had a poultice over the part, and she has taken mercury in moderate doses.

The dispersion of an abscess in this way, however, does not happen often enough, to lead us to lay down any general mode of treating it, with reference to that particular object. It may be said, however, that the mere occurrence of suppuration in a part is not a sufficient reason for giving up the employment of those antiphlogistic means we had been previously using, with a view of reducing inflammation. There is often very considerable inflammation existing, a great deal of hardness around, and redness of the part, though matter has formed at one point; hence we often continue with advantage the application of leeches, for instance, and the general means calculated to lessen inflammation, such treatment being likely, if the case admits of it, to favour the dispersion of matter by absorption.

When pus has formed, we may leave the progress of the case to nature, and allow the process to go on, which I have just described to you, keeping off all those causes that would be likely, either locally or generally, to disturb such natural process. Thus, we should keep the part at rest, keep it covered with soft poultices, place the patient on low diet, and pay attention to general health. In that way we may allow the abscess to go through its natural course, to break, to discharge of itself, and to heal up under a course of simple dressing. Frequently, however, we find it necessary to discharge the matter by an artificial opening, and different modes have been taken for accomplishing that purpose. Thus, abscesses have been opened by seton, by caustic, by puncture, by incision. In the discharge of an abscess by seton, a needle containing thread, is passed through the cavity from side to side, and the thread is left in the opening thus made, allowing the matter, by these means, gradually to find its way out. There is no kind of advantage belonging to this mode of evacuating an abscess. In phlegmonous abscess it is obviously inadmissible, on account of the irritation it produces, and, in fact, so destitute of advantage is it, in any way of viewing it, that it is completely abandoned. In the mode of opening an abscess by caustic, the prominent, or pointing part, that is, the thin part of the skin, is rubbed over with pure potash; and the slough formed by it is allowed to separate or drop off, and the matter is then discharged; or in the slough thus formed, an opening is made with the knife, and the matter is let out in that way. This is a kind of proceeding which is not generally applicable. Perhaps the only case in which caustic can be advantageously used in opening abscesses, is in instances of bubo, where the skin is become very thin, when it has been considerably detached from its subjacent parts, and where, consequently, a portion is likely to lose its vitality. I should have mentioned, in speaking of the nature and formation of abscesses, that when the skin has been rendered thin, it not unfrequently happens that the part sloughs, and the matter escapes in consequence of this natural process.

Generally, when we attempt to discharge the contents of an abscess, we do it by the direct means of puncture or incision, making an opening with a cutting instrument, very commonly a broad lancet has been used, called an abscess lancet, which however, in many respects, is not a very convenient instrument. I think you will find the best instrument is a large, strong, straight, double-edged bistoury, with a lancet point. It penetrates very easily in consequence of its sharp point and size; and when you have carried it into the abscess, you can easily extend the opening to any size you desire. With this instrument you make an opening, if you simply puncture the abscess, equal in size, to the breadth of the blade; or, if you wish to make it larger, after you have carried the blade in, you extend the aperture with a slight motion of the hand, as far as you wish. If the skin has become very thin, you will generally find it necessary to make a short incision, in order to let the matter out, otherwise the opening will heal up and prevent its its escape. It ir not necessary to make a large cut, as some gentlemen do; and still less is it proper to introduce the finger into the cavity of the abscess. I remember seeing a surgeon make an opening, and introduce his finger and turn it round several times, inflicting great torture on the patient, for the purpose of removing the core. In fact, the mere discharging of the matter, by the introduction of a knife, is apt to produce an irritation of the part; and if, in addition to this, you use any violence not necessary for the purpose, you of course augment that increased irritation. For this reason it is found necessary merely to make a puncture or incision, and to let the matter drain out of itself. It is by no means necessary to squeeze the part, in order to get out all the matter the abscess contains. You are not to consider it as a matter of importance, completely to empty the bag. Nature does not; she makes an opening, and a small part flows out; that heals, she repeats the operation, and more of it flows out. The mode she adopts, is to get it out by gradual discharges. If the opening made is to be attended by a considerable irritation, through squeezing it, there is not only no advantage, but obviously a good deal of disadvantage produced by the operation. After making the puncture or incision, let the matter slowly run out, cover the part with fomentations, or something of that nature, soft and moist, for half an hour, so that the matter may be more abundantly discharged, by the gradual oozing from the sides of the abscess, and then cover the part over with a poultice, till it heals.

Now it becomes of considerable importance to determine what are the cases in which an abscess may be left to its natural cure, and what are those in which it is desirable to make an artificial opening for the discharge of the matter. When the collection is near the surface of the body, and when it is seated in an unimportant part, you may leave it to itself—allow nature do the business. But there is a variety of cases in which you wish to abridge the period of inflammation, or to limit its extent; and for these purposes it becomes necessary that you should resort to the measure of artificially opening the abscess.

I have stated to you, generally, that the matter of an abscess gradually approaches to the surface of the body; but when the matter is formed deeply in a part, and when it meets, in its progress to the surface, with certain textures of an unyielding kind, it cannot approach to the skin, or, at all events, its approach is considerably retarded; and being resisted in this direction, it extends to other parts where less resistance is offered. Thus, when matter is formed under fascia—the fascia of the thigh, for example, a very tough and unyielding part—it will be a long time before it can make its way through that fascia; and not being able readily to get through, it extends under it, and the abscess becomes much larger in size than it would be but for this circumstance. When matter forms deeply in a limb, for instance under the muscles, it meets with more or less resistance, and in this way, either from its being resisted by thick unyielding fascia or tendons, its progress to the surface is retarded. Under all these circumstances, it becomes proper to make an opening for the discharge of the matter, as soon as you can satisfy yourselves that matter exists; and we, therefore, early open an abscess, if it takes place in the fore-arm, or in the thigh, and more particularly if it takes place either in the palm of the hand or sole of the foot. There is a very dense fascia covering those parts, and the integuments and cellular substance also are particularly firm and unyielding, so that matter does not come to the surface when it forms there; on the contrary, being deep-seated and confined by fascia, it makes its way along the course of the tendons, passing under the annular ligament—for instance, of the wrist into the fore-arm, and producing very extensive mischief. You must, therefore, as early as possible, open an abscess in those places; and sometimes, when you cannot feel the fluctuation, when you cannot ascertain, by external examination, that any matter is actually formed, even then you must make an opening.

The same observation applies still more forcibly to matter forming about the periosteum; for there the matter is confined by a firm texture, and if it is not let out, it extends to the whole line of the bone. When active inflammation takes place in a part where there is a large quantity of cellular tissue, there the abscess will become considerable, unless you discharge it early. This is the case about the anus and the perineum; and more particularly in matter forming where there is a good deal of cellular membrane that is covered externally by muscles, as in the axilla, the groin, and the neck. In the neck, there is a considerable quantity of cellular membrane by the sides of the traches, œsophagus, and about the carotid artery and jugular vein. These are covered by fascia; and it not unfrequently happens that the formation of matter takes place in the cellular membrane deep in the neck, and in consequence of the collection being covered by a firm texture, it has no disposition to make its way externally;—in fact, the matter will descend along the vessels of the neck, towards the cavity of the chest. There is not only this danger, but the patient suffers excessively during the time the matter is forming, in consequence of the large nerves and the important parts that are situated in the neck. Matter frequently burrows under the œsophagus and trachea; and you find active febrile disturbance under those circumstances. I have seen a patient, from matter of this kind forming under the jugular, delirious for several successive nights. Here you must proceed to make an opening as soon as you have obtained sufficient proof that matter has formed.

You will see that, under the circumstances I have mentioned, you are obliged to operate for the discharge of matter when it is seated so deeply that you cannot have the evidence of fluctuation, and, in fact, you must make an opening when the quantity is so small that it would hardly produce fluctuation. What then are the evidences by which you are to satisfy yourselves that matter has formed? You must consider the history of the case; you must consider the symptoms that have attended the origin and progress of the complaint; you must consider the pain the patient has endured, and the general appearances. There is usually, in the neighbourhood of the part, a swelling from serous infiltration, that is a symptom of importance too, in enabling you to determine what should be done. When the symptoms are very urgent, and, from the association of circumstances I have just mentioned, you have come to the conclusion that matter probably has formed, though you cannot feel any sufficient pulsation or fluctuation, you are fully justified in making an opening, though sometimes the matter does not afterwards actually flow out; there is no great harm in making a puncture to see whether matter has formed or not. You will sometimes, however, have to go very deep, in order to get at the pus; sometimes you will have to penetrate the whole length of the blade; and, further, particularly when the operation is in the neck, you must be careful of the place in which you make this incision, in order to avoid injuring any blood vessel, or other important part. It is necessary, too, in these places, where the matter lies deeply, to make a free opening, because in so doing you cut through parts that are in a healthy state, and if the sides of the opening you make were to remain in contact they would speedily close, and the flow of the matter would be prevented; you must, therefore, make a freer opening here than when the matter has approached nearer the skin. You must not only make such free opening, but in order to prevent the sides from adhesion, you must put something between the edges of the wound, to prevent their union by adhesion, allowing it to remain for four-and-twenty or eight-and-forty hours.

Matter must be evacuated as early as possible, when it forms in any parts that are of a dense or unyielding structure, such as when it takes place in the theca of the flexor tendons of the fingers, and more particularly if the parts, besides being dense and unyielding, possess a considerable quantity of blood vessels and nerves in the neighbourhood, because the process of suppuration occurring in parts thus organized, is attended with excessive pain. This applies to all the formations of matter that take place about the fingers. The pain accompanying such formation of matter is of the most severe kind, and you cannot too speedily relieve the patient from his sufferings. Moreover, as there is very little disposition in the matter to come to the surface, it is very likely to extend along the theca to the tendons and into the palm, and thus give rise to very considerable mischief. In all these cases, then, make an opening, even though you should not be absolutely certain that the matter has formed. There can be no risk, if you have any knowledge of anatomy, of wounding any particularly important part; the worst is, that you make a puncture in the skin without actually discharging the matter.

When matter is seated in the neighbourhood of any of the great cavities of the body or large joints, it is expedient to open the abscess early; not that there is any great fear of the matter penetrating into those cavities, but it does so occasionally: and it has sometimes happened, that matter forming in the parietes of the abdomen or chest, has found its way into the chest or abdomen, and destroyed the patient.

An opinion formerly existed, that where matter formed, it had the power of corroding or eating its way into the cavities. I need not say; that this is quite an erroneous notion. I need not say, there is no ground for ascribing any quality of this kind to collections of matter. The resistance to the discharge of matter in a part, produces the injurious consequences. Matter does not corrode, or chemically act on any part; and one is almost surprised to find in works published even in the present day, notions which seem to favour some opinions of that sort. I read only a day or two ago, of matter approaching the surface under the process of the "erosion" of the part,—in that way removing the surface; and that, too, in an article that was in other respects extremely well written.

Another case in which collections of matter should be opened is, where they are produced by the introduction into the cellular membrane of any irritating fluid, such as the effusion of urine or fæcal matter. The only way to limit the mischief which will be produced by such directly irritative causes, is to make free and early openings. When matter forms in parts which are of great importance to life, in consequence of their functions, such as in suppuration about the fauces, at the entrance of the pharynx—suppuration about the larynx—any formation of matter that presses either upon the trachea or œsophagus—all these should be opened as early as possible. And this, I believe, will nearly conclude the enumeration of the cases in which it is important to open abscesses early—in which it is important to anticipate the process of nature, in bringing the abscess to an external discharge much sooner than it would be brought, if it were left to its natural course.

In many of the cases I have now alluded to, it may be necessary, at the same time that the opening is made into the abscess, to employ such antiphlogistic treatment as shall be calculated to limit the inflammation, which may be supposed still to exist in a considerable degree. In any deep-seated formation of matter which you open in this way, you may, perhaps, apply leeches freely to the part, or even sometimes take blood from the arm, though you make an opening to discharge the matter. The opening of the abscess is not at all a reason why you should not employ antiphlogistic means. Thus if you have an abscess in the hand, and open it, you may very probably find it necessary, as I have said, in consequence of the swelling and redness, to take blood from that arm. You may combine the two circumstances—open the abscess quickly, in order to limit the extent of the matter, and employ antiphlogistic treatment, in order to prevent the recurrence of inflammation.

LECTURE XII.

Recapitulation—Qualities of Pus—Chronic Abscesses—Mortification.

I MENTIONED to you, gentlemen, in the last Lecture, various cases in which it is necessary to open abscesses, instead of waiting for their natural discharge, and in most of which, it is also advisable to open them early, in order to limit the extent of that mischief which suppuration must otherwise produce. As I do not know that I enumerated on that occasion the whole of the cases that come under this head, I shall now recapitulate what I then said, and make the catalogue complete.

This mode of proceeding, then, is necessary, in the first instance, where matter forms deep in a limb, and where its progress to the surface is opposed by strong fasciæ, tendons, or muscles, as in deep suppuration in the fore-arm, in the thigh, or in the leg, and more particularly in the palm of the hand and the sole of the foot. Secondly, where violent inflammation attacks a part in which there is an abundance of cellular and adipose tissue, such as about the termination of the rectum, and the neighbourhood of the anus; and this more especially where, in addition to the existence of an abundance of cellular tissue in the part inflamed, there are muscles, fasciæ, or other parts over that tissue, tending to prevent the advance of the matter to the surface, as in suppuration in the neighbourhood of the male urethra, either in the perineum, or in the scrotum, in the groin, in the axilla, and deep-seated abscesses in the neck. Thirdly, whenever matter forms in parts of very dense and unyielding textures, or in those in which there is a very abundant supply of blood-vessels and nerves; the fingers exemplify both these circumstances. Fourthly, in the formation of matter which takes place in the immediate neighbourhood of the great serous cavities of the body, or of the large joints. Fifthly, in those which might interfere with parts that are immediately essential to life, such as purulent formations about the throat, in the neighbourhood of the larynx; such as formations of matter that might press on the trachea or the œsophagus. Sixthly, in those suppurations which are produced by the introduction into the cellular membrane of irritating fluids, as extravasated urine or fæces. And, lastly, in certain cases where it is expedient to prevent an extensive suppuration on account of the deformity that might be consequent, and where a small puncture, made at an early period with a cutting instrument, will leave a less considerable scar than you would have, if you allowed the advance of the matter to the thinning and destruction of the skin. This particularly applies to the secretion of pus about the face and neck.

The matter contained in an abscess long secluded from external influence, undergoes no change after it is secreted—no change in composition. It may remain weeks or months, or, I believe I might say years, without undergoing any of the spontaneous alterations that would take place in it, if exposed to the air. Hence, when the pus is let out, it has but little odour; it has, perhaps, what may be called a faintish smell; hardly any considerable odour. Sometimes, however, we find that the matter which we evacuate has undergone decomposition; that it has, in fact, become putrid. Instead of a white, thick, soft, homogenous liquid, we discharge a dark and stinking fluid, or a pus, in which there are numerous streaks of blood, and sometimes a mixture with coagula of blood, excessively offensive. In some instances the matter presents the ordinary appearance of good well-formed pus, being at the same time very disgusting to the smell, this fetidity being the only indication of a change. Now this is a state of matter observed particularly in abscesses occurring in certain situations. It is very commonly noticed in those that form about the neighbourhood of the anus, near the termination of the large intestine; in those that form in the neighbourhood of the male urethra, either in the perineum or about the scrotum; in those that form near the entrance of the female organs of generation, the labia or nymphæ. These are the situations in which you often meet with the phenomenon in question.

You might, at first view, expect the existence of some communication between those outlets and the cavity of the abscess, and that thus the circumstance might be accounted for; but this is not the case. We find it in situations where we are certain there is no communication between the cavities and the parts I have mentioned, so that we cannot give an explanation on that ground; and what puzzles one is, that in some instances of this kind we do not find this particular fetidity. It is not a constant occurrence in abscesses formed even in those situations. It has been supposed that the presence of coagula of blood in the cavity of an abscess, might lead to this decomposition; and we certainly often find, that the matter does become fetid where coagulated blood is mixed with it in an abscess. Now I have sometimes seen suppuration taking place in hemorrhoids about the anus, and there the matter that is deposited becomes mixed with coagula of blood, and in these instances such matter has been excessively offensive; but in certain cases we find the same occurrence where the abscess does not form in the particular situation I have now mentioned, and where no coagulum of blood is mixed with the matter to account for the circumstance. I remember an instance of a boy in this hospital, who came in with considerable inflammation in the parietes of the abdomen, immediately over the situation of the colon. He said he had had a complaint in the bowels some weeks before, and that this came on subsequently. After he had been in the hospital a few days, there was manifest fluctuation; it was clear that matter had formed, and I let it out. The abscess contained about six or eight ounces of white, and, in appearance, very well-formed pus, possessing the fetid character I have just mentioned. This was an instance in which the matter formed near to a portion of the large intestines. I remember the case of an Irishman who came into the hospital with a swelling at about the middle of the inside of the thigh, exceedingly painful, and in which no fluid could be felt on examination. Leeches and poultices were applied, and other means were employed to relieve the pain which was ascribed to the inflammation of the part. In a little time, however, it was clear that an abscess had taken place; there was matter formed, which I evacuated by puncture. About two or three ounces of very fetid pus flowed out, mixed with coagula of blood. I recollect, also, a patient who died in the hospital from inflammation of a vein in consequence of venesection. An abscess occurred in the upper part of the forearm, which I opened before the patient died, and evacuated a mixture of matter and excessive fetid coagula, amounting to two or three ounces.

You will find, that both the local and the general symptoms, in cases of abscesses presenting the peculiar characters I have mentioned, are very severe. There is high local inflammation, and a corresponding febrile disturbance of the system; but when you come to open those abscesses, and find the subsequent progress is favourable, the recovery of the patient is just as rapid as if the pus had not displayed those particular characteristics. This state of decomposition is not always to be regarded as an unfavourable circumstance.

Chronic Abscess.—I come next to speak to you of chronic suppuration, or chronic abscess. Respecting suppuration, I may repeat the remark which I had occasion to make to you on the subject of inflammation, namely, that there are not exactly two degrees, and no more, of suppuration. We cannot say there is just one state which you call acute, and another which you call chronic; on the contrary, there are numerous stages. On the one hand you have an inflammation in which pus forms in the course of a few hours, and that will come to the surface, and be discharged externally, in the space of a couple of days or less. On the other hand you have instances in which the suppuration will be of long duration, and in which the matter may remain in the part where it has formed for weeks or months, without approaching the exterior of the body. Again; you will meet with every possible gradation connecting these two extremes.

To local symptoms, that precede formations of pus in chronic abscesses, are so slight, that they not unfrequently escape attention. The patient himself may not notice even the existence of inflammation, and he often only becomes aware of it when the tumour containing the secretion is rendered obvious to the sight. A medical practitioner once brought to me a youth, his apprentice, wishing that I would examine a tumour upon his thigh. To my utter astonishment I found a large abscess there. I inquired of my friend how long the youth had been ill, to which he replied he did not know, but he had only complained the day before. I laid open the abscess, and it contained more than a pint of matter. This youth, though in the medical profession, had been following his avocations, and had not mentioned that he had any thing the matter with him. Some time since, a gentleman consulted me for a tumour in his neck. He told me it had existed there for about two years. He was a stout, hearty man, with a good constitution. He said he had observed it, without having experienced any inconvenience from it. On examination, being sure it contained fluid, I let it out, and found it was a chronic abscess, containing about three ounces of matter.

In consequence of these perulent collections occurring in so insensible a manner, with previous inflammation of so slight a character, we are occasionally liable to mistake such collections for tumours of a solid kind, particularly if the cyst, in which the matter is deposited, should happen to be thick and firm in texture. A female was, some time ago, shown to me, in consequence of a tumour in her axilla. She had a tolerable-sized lump there, which felt quite firm; she was about forty years of age, and her health was very good. I carefully scrutinized the part, and it appeared to me to be a solid tumour. After some interval I saw it again, and its situation then seemed to be nearly the same. She said it had never given her any pain—that it had slowly arisen. I thought it necessary that this tumour should be removed, and deeming it to be a sarcomatous growth, I recommended this treatment, and appointed a day at some distant time (as the patient lived in the country,) for performing the operation. Before putting the patient on the table, I again examined the swelling very particularly, and thinking that I felt a fluctuation, I was led to puncture it; which, as the operation would have been rather formidable, was, at all events, a proper precaution. I had no sooner punctured it than out came about a cupful of tolerably well-formed matter. I have seen patients in the hospital, who have been laid upon the table for the removal of tumours, when, in consequence of a supposition by some one that there was fluctuation, the tumours have been punctured, and found to be of this description, the matter being let out. I remember the case of one person who came up from Wales with a tumour under the jaw, and who spoke to me upon the subject. I examined it particularly. It was under the sterno-mastoideus, and a very firm tumour. I dissected it out. It required an incision to be made from the chin to the sternum; and, when taken out, its external appearance led me to suppose it a very hard and dense tumour; but, on being cut into, it was found to consist of a very compact and tough cyst, full of pus.

These cases show you what mistakes may occur with regard to matter formed with very little previous inflammation; and they afford you an important caution, that in any doubtful case, where you think of extirpating a tumour, a preliminary puncture should be made, which is quite a safe measure, and may save the patient from the sufferings of a severe operation. They show you that, in certain cases, though the formation of matter takes place in this insensible way, there may be as much condensation in the surrounding cellular tissue as to afford a very tough and firm feel, though, in chronic inflammation, the cyst is generally thin, by no means possessing the attributes I have mentioned; and, in the instance of the gentleman before spoken of, in whom the tumour formed in the neck, and had been there two years, the cyst was so thin, that when the matter was discharged, you could not have supposed there had been any swelling there at all; one side of the neck appeared just like the other.

In consequence, then, of chronic abscess forming with so little vascular disturbance of the part, without any of that heat or redness which precedes suppuration in acute inflammation, and with the limb possessing its apparently natural temperature, or, at all events, without much augmentation, suppurations of this kind have been called cold abscesses—abscessus frigidi—the abscès froids of the French—in opposition to hot abscesses.

There is another distinction between the two kinds of abscess, afforded by the nature of their contents. You will naturally expect that local actions, so dissimilar in their character, should produce very different results. You find, accordingly, that the matter of chronic abscess is thin, approaching often to what we call the serous, whey-like, appearance; and that it contains a curdy substance, flakes, or shreds. Those flakes of matter contained in chronic abscesses, are sometimes described as flakes of lymph, that word being often employed in a very vague and indefinite manner, and one is really obliged to use it as other people do. Large masses are sometimes met with in chronic abscess, having rather a firm and fibrous texture; but I do not exactly know how to explain their occurrence. They are sometimes very firm, of tolerable size, and often afford considerable resistance, as if they were composed of cellular membrane. The fluid very frequently resembles serum, and it is from this circumstance that the name of lymphatic abscess has been given; that is a term by which they are frequently described by the older, and the continental, writers.

As the inflammations accompanying chronic abscesses are so much less marked than those which produce the acute, you will, in general, find that the cyst is much thinner, and the feeling of the abscess in the limb is so soft, that you might almost be of opinion that the matter is contained in the limb without a cyst; and you do not find the smooth surface walled and baricadoed by that thick cyst which characterizes the phlegmonous abscess. For this reason, chronic abscesses very usually extend their circumference in all directions, and they are apt to acquire a very considerable magnitude; for not only are they deficient in the strength of the cyst which limits their extent, but there is also a disposition to come to the surface. When, therefore, their advance to the surface is opposed by fasciæ, as in the case of the thigh, they may advance along the whole length of the limb without coming to any particular point—thus extending from the trochanter down even to the knee.

Chronic abscesses are generally included under the head of what are called spontaneous inflammations; that is, they attack places from internal causes, which, in most instances, elude our observation. Sometimes, however, they arise from obvious local causes—the irritation of a diseased bone, for example, continuing to act, will produce collections of matter of this kind. It is purulent secretion of this description, arising from such a cause, which constitutes the chronic abscess termed psoas or lumbar abscess, where, in consequence of the disease of the vertebræ of the lower portion of the back or loins, matter forms around that diseased part, and then descends through the loose cellular membrane, covering the muscles along the side of the pelvis, into the thigh; it may take a course towards the back, or may go in various directions, either within or on the outside of the pelvis. Here you see the effect of the barrier—the solid cyst which the abscess affords against the extension of the pus, for that matter which has been formed high up, will naturally gravitate downwards to the groin, or even a considerable way down the thigh, or to the knee; hence arises the distinction, which has been made of an abscess of, and an abscess in, a part; for a collection of matter that has thus descended gradually by its own weight into the thigh. can hardly be called an abscess of the thigh. This disposition of a chronic abscess, and this want of active tendency to come to the surface of the body, render it necessary that we should discharge the contents by a surgical operation. There is hardly any limit to the size this kind of abscess may gain, if not opened; but there is a difficulty in respect to the manner of opening them. When you give vent to a collection of this sort, (or should a spontaneous aperture take place in it,) if you proceed as you would in opening a phlegmonous abscess, that is, make an incision and let the matter run out, then applying a poultice, the access of air into the abscess produces decomposition of the pus which it contains; the matter becomes fœtid, the surface of the abscess is inflamed, and the secretion from its sides becomes altered—thin and stinking, exceedingly irritative to the portion which is in contact with it. The inflamed surface of the abscess is a source of sympathetic disturbance in other parts—in the alimentary canal, or in the vascular system; and thus arises fever of a peculiar kind. This constitutional disturbance re-acts on the local mischief, and the aggravation of the local mischief again makes the constitutional disturbance worse, so that, between them both, the patient is very frequently destroyed. And here you should consider what I mentioned to you just now, that the remote, or predisposing cause of those abscesses is almost, or indeed invariably, an unhealthy state of the constitution. You find them occurring, not in healthy individuals, but in those whose constitutions are naturally feeble; more especially in such as exhibit what is technically called the scrofulous disposition. In these cases therefore, you have to contend both against the local disturbance, and against that bad state of constitution in which this local mischief has its origin.

It is very desirable, then, to get rid of the continuance of an abscess of this kind, without incurring the risk of the inconvenience I have just alluded to, and the particular mode of proceeding pointed out by Mr. Abernethy was designed to avoid this risk. You will find, in fact, that by adopting the plan he has described, you may get rid of the contents of an abscess without incurring the danger of that local inflammation of the cyst, and those constitutional effects to which it gives rise. Mr. Abernethy's mode of proceeding consists in making a small puncture into the abscess, allowing the contents to escape gently, and without permitting the introduction of air into the cyst, then closing the opening, keeping it shut by adhesive plaster, and thus putting it into a situation for union by adhesion. In order to accomplish this with greater certainty, he has recommended that the skin, before the puncture has been made, should be drawn a little aside, so that when the skin resumes its place, the opening through it and that into the cyst do not correspond; it is a method of making the aperture through the skin and into the cyst direct, but in fact valvular.

After the matter has been evacuated in this way, there will be another secretion, and the incision must be repeated, so that one abscess may require several punctures. Under favourable circumstancess, the abscess becomes limited in size, its parities contract, the quantity of its contents is diminished, and thus, at last, you bring it to so moderate a size, that you may make an opening into it in the usual way, and trust to its healing, as you do in the case of a phlegmonous abscess. This, then, is the method, when it goes on favourably. Now you will easily understand, that you must not expect such a termination as this in lumbar abscess at all times, nor in all chronic abscesses; for, although this method prevents the injury that would arise from opening the cyst of a chronic abscess to the air, yet, of course, by puncturing it, you cannot get rid of that which exists in the vertebræ, nor in the disease in the bones of a joint. There are other sources of danger in these particular cases, which are to be obviated by other means.

In conjunction with all the means you would adopt, likely to be beneficial in chronic abscess, you would resort to those measures favourable for re-establishment of the health. You would give the patient the benefit of residence in pure air; you would attend carefully to the diet, letting it be light and nutritious, paying attention to the state of the stomach and bowels, and, in fact, to all those circumstances which generally contribute to the promotion of health. When the matter of chronic abscess has been let out, and you find the cyst having but little disposition to go into that state of contraction which would tend to obliterate its cavity, you may sometimes find it advantageous, if the nature of the part allow, to submit that portion to pressure, and thus promote the disposition to contraction. When a chronic abscess is seated in one of the limbs, a bandage may be applied after the matter has been evacuated; still, however, since abscess of this kind very frequently remains in a state of fistula, and as the fistula is often very considerable, we occasionally, under such circumstances, succeed in accomplishing the cure by the introduction of a seton through the track of the fistula. The presence of the seton excites a greater degree of inflammation in the sides of the cavity. After this has been produced, the seton may be withdrawn, pressure may be applied, and the sides will very frequently adhere; sometimes solutions, a solution of the sulphate of zinc particularly, have been used. In using this, however, you must be cautious, because you must not think of irritating the sides of a cavity of this description, when it is considerable; you should only gently employ the solution when the sides are materially reduced in extent. Further, in following up those means, it is sometimes necessary to slit up the opening longitudinally, and let it heal from the bottom; and that proceeding is usually adopted in the small fistulæ or sinuses, which frequently take place after the artificial puncture or natural bursting of phlegmonous abscess.

Mortification.—The next subject, gentlemen, on which I have to address you, is mortification. Mortification is the death of a part, that is of a part only, accompanied by a peculiar change of structure, the result of a previous peculiar vital action. By this latter circumstance, mortification is distinguished from simple death, as in the case of an amputated limb; or from tempory suspension of vital action; as when parts are frost-bitten: or from putrefaction, which frequently takes place after mortification has occurred; this, however, is by no means essential to the process; and, indeed, some kinds of mortification are to be considered as complete preservatives against putrefaction. Mortification is also distinguished, by the same circumstance, from chemical decomposition, such as is produced by the application of heat, or any powerful agency, to a portion of the body.

Mortification, gangrene, and sphacelus, are terms that are used almost indiscriminately; yet, perhaps, there are shades of difference between them. Mortification is the most general term; gangrene, perhaps, is more particularly employed to denote external superficial mortification, and the word sphacelus is employed in the case of an entire limb, or a considerable portion of a limb, mortifying. We use the words slough and sloughing as synonimous with those I have just mentioned; but these terms are English words, that is, I believe, they are derived (at least Mr. Horne Tooke says so) from the Anglo-Saxon. To slough means to perish, and a slough denotes that portion of the body which has perished. Now you recollect that the word slough, in common language, is applied to the covering of the snake, which separates annually from the surface of its body; in short, slough denotes the portion that has perished, and is thrown off from the body.

Mortification consists in a cessation of the living action, or, one may say, more particularly, in the cessation of the circulation in a part. The consequence of this is, that that portion loses its heat, its sensibility, its power of motion, its natural colour, and becomes black or livid, brown or bluish, or it assumes various combinations of those tints of colour. When this cessation of vital movement has taken place, the part then undergoes spontaneous or chemical changes; the textures that compose it become softened. Very commonly the part, at the time of mortification, contains an abundance of fluid; all its vessels are replete. Those fluids, and the solids with which they are in contact, undergo chemical changes, and the textures of the body become reduced into a pulpy, putrid mass, which is exceedingly offensive. Gas is generated and discharged from the interstices of a part which is thus changed. In other circumstances, there are changes exactly the reverse of these; there is a drying, a shrinking, and a shrivelling up of the part, which, instead of putrefying, goes into a state in which you might preserve it; you might hang it up in the air, and it will remain in the same state for several years without undergoing any particular alteration.

Now these are two very distinct changes, both of which are called mortification, and the difference could not escape the notice of the most common observer; hence you will find, from the writings of the early authors, that the former is called gangrena humida, and the dry, gangrena sicca. These differences are nearly equivalent to the distinction into acute and chronic gangrene; for the humid is that which takes place from actual inflammation of a part, leaving it with all its vessels full of fluids; the others occurs in a slow, insidious way. Nearly all parts of the body are liable to mortification; I believe we may say all, but all are not equally liable. Cellular membrane is said to be the most prone to mortification. Skin, perhaps, although much less subject, may come next in orders The blood-vessels resist mortification longer than any other textures; and, in cases of extensive mortification, near the trunks of large vessels, you will often find that those trunks remain nearly unchanged when all the surrounding tissues have perished.

This mention of the resistance of blood-vessels to the process of mortification, leads me to observe to you, that the blood which is contained in those vessels becomes coagulated in the neighbourhood of the mortified part, and even to some distance beyond it; so that when the dead portion comes to be separated from the living, there is no loss of blood in consequence of the opening of such vessels. This process of coagulation, in cases where mortification attacks the lower part of a limb, will extend very considerably above the point to which mortification seems to reach externally, so that in the case of amputating a thigh, where the mortification has not extended above the knee, the femoral artery has been completely filled up, plugged up, with bloody coagulum, so as not to require the application of a ligature.

That which has undergone mortification is separated from the sound part of the body by a process which will afterwards be described to you. I may only mention to you here, that there is a considerable difference in point of the time that is occupied for this separation in particular cases. You may sometimes find a mortified part separated in the course of a few days, whilst, in other instances, the separation may occupy many weeks, or even months. There is very considerable difference in the constitutional symptoms that are seen in different instances of mortification. In cases of slight mortification of superficial parts, there are often no constitutional symptoms at all. When mortification is the result of high inflammatory action, there is generally a remission of symptoms taking place at the time the mortification occurs; the high febrile disturbance becomes diminished; but if the mortification be not very considerable, the local inflammation may continue nearly in the same degree, and there will be little difference observed in the constitutional symptoms.

You will have occasion to observe, what we pointed out, in speaking of sympathetic inflammation, the conformity between the character of the constitutional disturbance and that of the local disease; for where a part of the body perishes in this way you find general symptoms of debility are present—symptoms approaching very much to typhoid. The pulse is very feeble, intermittent, and irregular; the body is covered with a clammy sweat;—there is a complete loss of muscular power, sometimes even with syncope; hiccup takes place; the alimentary canal becomes distended with gas, approaching to the tympanitic state. In fact, all the circumstances denote the lowest degree of depression in the powers of the system generally.

LECTURE XIII.

Hectic Fever—Treatment of Hectic—Mortification resumed—Its Causes, Prognosis, and Treatment.

GENTLEMEN, having omitted in my last lecture one part of my subject, of which it was my intention to have spoken, I shall now fill up the vacuum, and prevent a dislocation of the subject.

Hectic Fever—The constitutional disturbance which takes place when inflammation arises in the cyst of a chronic abscess, and when copious and continued suppuration occurs, has obtained the name of hectic fever. Hectic fever is a disturbance of the system, arising from the weakness occasioned by long-continued and serious local disease, more especially when such local disease is attended with suppuration. Hence it has been sometimes called suppurative fever, though that name would be objectionable, because suppuration very commonly occurs without any symptom of hectic fever, whilst, on the other hand, hectic fever may take place where there is no suppuration. Hectic fever occurs in various medical as well as surgical cases. In extensive pulmonary disease of a tubercular character, though the disease may not have proceeded to the extent of suppuration, you may have all the symptoms of hectic, and in an affection of some important joint of the body, in which the formation of matter may not have taken place, hectic may have occurred. After a serious injury, such as a bad compound fracture, violent inflammation of the limb will generally supervene, and, in conjunction with this serious local disturbance, there is a corresponding inflammatory fever; matter forms in consequence of the inflammation, and a palliation of the symptoms succeeds; there will be a recurrence of the inflammation, fresh purulent collections will take place, and fresh frebile symptoms accompany them; in this way the strength of the patient becomes considerably reduced, and, after a length of time, the local disturbance becomes altered; the limb is no longer swelled, red, and the seat of successive phlegmonous abscesses, but it is, perhaps, shrunk in size; œdematous, instead of having the firm swelling which characterizes phlegmonous inflammation, and probably a profuse discharge of thin matter takes place. Together with this change of the local symptoms, there is a corresponding alteration in the constitutional disorder. The local disease has renounced its acute, and assumed a kind of chronic character; and a similar alterations occurs in the febrile symptoms. The patient now becomes hectic, that is, he has what we may call a kind of chronic fever.

In hectic, too, whether it come on in consequence of the changed state of the local affection proceeding from a severe injury, whether it be connected with the irritation arising in the cyst of the chronic abscess, or whether it depend on a slow disease in some important organ of the body (such as the lungs or a joint); we find that there is considerable disturbance in the circulation, and that the pulse is accelerated, though feeble. It varies from a hundred to a hundred and twenty and upwards; and it often remains for weeks and even months at one hundred and twenty, without sinking below that point. The patient sometimes feels heated, sometimes chilled. The surface of the body is now red and flushed, now pallid and cold, and frequently it is bathed in profuse perspiration. Slight degrees of excitement are sufficient to bring on flushings, which induce perspirations. The tongue is moist, and perhaps clean; the functions of the digestive organs are more or less disturbed, and towards the latter part of the affection, a diarrhœa comes on, which can hardly be restrained by any means we may employ. The perspirations in the latter stage of hectic are very profuse, and the discharge by the bowels is also very excessive; and hence we have the terms colliquative sweats—colliquative diarrhœa, which merely mean melting, as if the body were melting away under the profuse discharges by which it is drained. Great restlessness and discomfort at night are also attendants on the debilitated patient.

Now the symptoms of hectic do not remain at the same degree during the whole four-and-twenty hours; on the contrary, there is a very striking exacerbation towards evening, and an equally well-marked remission of symptoms in the morning. Towards evening, the pulse becomes accelerated, the body heated, the patient feels restless and uncomfortable, and in the course of the night he probably becomes bathed in profuse sweats, the disturbance terminating in that manner. In the morning he is comparatively free from fever, and so remains some part of the day. Such are the principal stages of that condition which constitutes hectic fever.

It has been the subject of doubt, whether hectic fever can be cured? The real question is—whether you can cure the disease that causes the symptoms—whether you can remove that ocal excitement which produces the general disturbance of which I have just spoken? If you can do this, you can cure hectic fever; but in most instances the local disease is of a very serious kind, very frequently irremediable, and if you cannot put a stop to *it*, you cannot put a stop to the constitutional symptoms excited by it. You cannot expect that hectic fever will be cured, while the origin of it remains in its full force. But, in cases where the cause admits of removal, as in severe disease of a joint (the knee-joint for instance), which can be removed by amputation, you will find that all symptoms of hectic will very speedily cease when the cause is cut off. You will find the pulse will then sink, the appetite be regained, and in fact, health be recovered.

Treatment.—What then is the treatment for hectic? If you regarded it merely as *vascular excitement*, you would suppose it would be necessary to adopt some measures calculated to reduce that, but you must take into your consideration the powers of the system. No direct means of this sort could be borne; they would merely lessen the powers of the system, without doing good at all. Your object, then, in that case, is to sustain the strength of the patient—to keep up the powers of the system by means that do not at the same time excite. You would, then, be inclined to give the lighter kinds of tonic medicines, the dilute mineral acids, with bitters, such as *bark* and *cascarilla gentian*. You would let the patient take, according to his appetite, in moderate quantities, light, but nutritious diet. The dilute mineral acids (particularly the dilute sulphuric acid) possess as much power as any I am acquainted with, in checking the profuse perspirations during the hours of sleep. When the patient gets no rest, and passes uncomfortable nights, you may occasionally deem it necessary to administer narcotics. It is, on the whole, a palliating plan; and, at the same time, you endeavour to administer mild nourishment to support the patient's strength, and enable him to repair those local injuries, for this is essential to the cure of the fever.

Mortification resumed.—I now resume the thread of discourse respecting mortification.

Causes.—The causes of mortification are very various; hence the mode of its occurrence, the seat of the affected part, and the whole progress of it, vary much in different instances. Under the head of causes of mortification, we include a great variety of agencies, which are capable of suspending the circulation of a part immediately, or producing such violent disorder in that circulation as will be equal to the suspension of it, the nature of the affection being essentially a cessation of the vital movements of the part. Now among those causes, there are some which will surely produce the effect, whenever they are applied to a part of the body; there are others which will only produce the effect, when applied under certain circumstances; that is, when they affect certain individuals, possessing a certain state of health. Those unhealthy states of constitution, which, in common language, and not very inappropriately, are called "bad habits of body," are the most powerful predisposing causes. There are such conditions of health in individuals as will lead to mortification, on the application of very slight disposing causes; and there are certain states of certain parts of the body, in which the occurrence of mortification would be very speedy. For example, it sometimes happens that the arteries of a limb may undergo certain changes, and become ossified. Here are specimens (showing them) of a portion of a large artery, converted into a complete bony canal; and when this change takes place, as it frequently does in the trunks of large vessels in the extremities of old persons, you cannot wonder that the circulation in the capillary vessels should be easily disturbed, and lead to mortification on the application of slight causes.

The division, then, of predisposing, or direct and exciting causes, is as important in mortification as in inflammation, and other important diseases. Among the causes of mortification, we may enumerate the application of intense cold to the body; the infliction of very serious local injury; the direct interruption of the supply of blood to a part by pressure, or by ligature, in the main artery of a limb. In the same way certain diseases of the heart, particularly those which produce a contraction of the orifice of the aorta, are capable of inducing mortification. Two or three winters ago I had a lad in the hospital, under my care, who laboured under a disease of this kind: we could not ascertain, exactly, the nature of the disease about the heart, for the body was removed before we could examine it; but mortification came on in the toes of both feet, and I have very little doubt, that that was owing to ossification of the orifice of the aorta, so as to interrupt the passage of blood from the heart to the extremities. By local pressure on a part where veins and arteries are very numerous, such as that of stricture of the intestine in strangulated hernia, general pressure on the whole of a limb, particularly when that limb becomes the seat of acute inflammatory action, will produce mortification. Now, it sometimes happens, after serious injury to a limb, that a bandage is applied to it; much swelling often succeeds, and thus the bandage, which has been applied only with a proper degree of tension at the time, becomes an excessively firm ligature over the whole limb, and thus the application of a bandage has too often led to mortification, and even to the death of a patient. Pressure on a part of the body by a particular position long kept up, as when a patient remains in bed upon his back, in consequence of some serious injury, the portion of the skin upon which the body rests, will frequently mortify from that cause. Violent inflammation, which first excites the circulation, and then leads to its suspension, will produce this calamity. It appears as if, under violent inflammation, the disorder is sometimes carried to a height which the part is not capable of sustaining, so that the blood stagnates, and, in fact, the part perishes. Generally speaking, a high degree of inflammation is necessary to produce this effect; but sometimes mortification occurs from a degree of inflammation that does not appear to us to be of the highest kind; and, indeed, in cases of this description, we must consider the state of the system, and of the part in which the inflammation takes place. When the limb has been in a weakened state, a comparatively trifling degree of inflammation will be sufficient to produce mortification. If a part has been frost-bitten, and consequently much weakened, the inflammation that ensues, though not very violent, leads to its destruction. In the case of *anasarcous* limbs, when blisters have been applied, or when limbs have been scarified to let out the fluid with which they are distended, it has been by no means uncommon for mortification to be produced by those comparatively trifling local injuries; and here you ascribe the occurrence by no means so much to the degree of inflammation, as to its combination with want of power in the vital functions of the part.

I have already mentioned mortification as an effect of that particular change in the state of arteries, known by the term *ossification*. Now, certain other internal causes, the nature and operation of which are unknown to us, are also capable of producing mortification. Thus, feeding on rye in that particular state in which it is called, by the English *spur*, and by the French *ergot*, predisposes to mortification; so that, in those countries where rye is an article of food, there are, in bad seasons, when it gets into this state, numerous instances of this calamity. Mortification, too, sometimes happens from external causes, the nature of which is equally unknown to us. Thus it may be produced by the contact of the skin with some animal substance, in a state of decomposition which will produce a gangrenous affection which we call malignant pustules. Now the various causes I have mentioned should be divided into two heads, the internal and external. Of the internal, the most important is an unhealthy, weakened, or deranged state of the constitution, which produces a predisposition to mortification.

Prognosis.—The prognosis in mortification is generally a matter of importance. There are, however, some mortifications slight in extent, and derived simply from external causes, which are unattended with any kind of danger: thus a person may have a mortification of part of the skin covering the tibia, in consequence of a smart blow upon it; that, of course, is not a dangerous circumstance. The skin covering an aneurism, when rendered very thin by the approach of the tumour to the surface; that also covering an abscess, when it is pointing, may mortify. These are examples of limited mortification, from causes that merely act on a small portion of the body, but In other instances, and especially in all those where mortification is referrable to internal causes, and where we explain it chiefly by that unhealthy state of the constitution to which I have alluded, the prognosis is always very serious. The extent of the change, the depth to which it proceeds, the importance of the organ attacked, the state of the constitution of the individual in whom it occurs; these are points which should be attentively considered by you before you venture to pronounce an opinion as to the result of the case.

Treatment.—In an affection, of which the nature and cause are so dissimilar, you will naturally conclude that no one mode of treatment can be appropriate to all cases. Heretofore, attention has been chiefly given to the circumstance of the loss of vitality in the part affected, and to the impending loss of vitality in the parts to which the disease seems to be extending. Hence an idea has been entertained that all means should be taken to stimulate the parts, so that the general rule has been to apply stimuli locally and generally, internally and externally; to give bark, tonics, and cordials, as well as a full nutritious diet. This is by no means proper as a general plan of treatment in mortifications. Undoubtedly, in *particular* instances, it is right to employ means of this particular order, but we can in no wise say such a practice would be right in the *generality* of cases. Some have asserted that mortification is always preceded by inflammation, and in their treatment they have principally regarded that circumstance; viz. its origin in *inflammation*, or the inflammatory character of the primary affection. It is, perhaps, rather doubtful whether this notion could be completely verified in all cases. It is doubtful whether a distinguishable state of inflammation does always precede mortification. At all events we should certainly go very wide of the mark if we were to treat all cases of mortification by antiphlogistic means. We can easily suppose that, in the extreme prostration of all the powers of the system which sometimes characterizes mortification, it would be actual madness to think of employing antiphlogistic treatment. The general method of treatment to be observed where mortification is threatened, or where it actually exists, is, first, to prevent its occurrence; secondly, to arrest its progress, or to combat particular symptoms; thirdly, to favour the separation of the dead parts from the living, and, under circumstances where that is proper, to accomplish such separation by an operation. These are the general indications which the treatment of mortification presents.

In considering the first, we should bear in mind the nature of the particular case of mortification. Antiphlogistic treatment will prevent the occurrence of mortification where it is likely to come on from acute inflammation. When a part is under the chance of mortifying in consequence of *cold*, a judicious mode of restoring the temperature will be a good preventive. So in each particular case the treatment calculated to prevent its occurrence is suggested from the cause that produces it, which signifies, in fact, the particular nature of the affection.

It is an important consideration, to determine the means by which the second indication can be accomplished—of preventing the progress of the affection. Now, heretofore, mortification has been regarded much in the light of putrefaction—decomposition and decay of the part attacked; and in the attempts at finding out means by which its progress could be prevented, investigation has been made to ascertain those substances which would put a stop to the progress of putrefaction in dead animal substances; and it has been argued, that the same means that would prevent the progress of putrefaction in dead animal matter, would equally prevent the progress of mortification in the living body. Hence the class of substances called *antiseptics;* that is, substances calculated to prevent putrefaction, have been principally relied upon in the treatment of external mortification. Alcohol, camphor, turpentine, bark—these are very well known to have the power of preventing that spontaneous decay in dead animal substances, which would otherwise take place. Now you are well aware, however, that the change which occurs in mortification, is by no means to be considered as identical with putrefaction; and although these substances would retard putrefaction in the dead body, it by no means follows, they would prevent living parts, which are seriously disordered, from going into a state of mortification.

With reference to arresting the progress of mortification, we want to discover, not what substance would preserve the part for a length of time when dead, but what will prevent the part, while still living, from losing its vitality and passing into a state of mortification. Now if you consider, that in a number of instances the living parts which are attacked by mortification, are in a state of high inflammatory action, you will immediately perceive that alcohol, turpentine, camphor, and such substances, cannot be well calculated to prevent the occurrence of mortification; and, indeed, we may dismiss altogether from the catalogue of local means the substances called antiseptic, which are so much recommended by old writers in the treatment of mortification. Their employment has entirely arisen from an erroneous view of the subject.

There are certain substances which have the power of correcting or of destroying the *fetor* which attends the process of mortification. Charcoal is one of those, and thus the application of charcoal to the diseased part is often advisable, with reference simply to removing the annoying and offensive smell that attends it. For this purpose you use very finely-powdered charcoal, and mix it up with bread into a poultice, till the poultice is entirely black, then apply it to the part, and you will find that the offensive *fetor*, which is very great, will be much corrected. Alcohol and camphor have the same power in some degree; but the most powerful agents in removing this, are the chlorates, or the chlorurets of lime or of soda, which have of late been introduced into practice by the French, and have been employed by them as disinfecting agents, as means for destroying the infectious character of various effluvia; and I believe they may be said to possess that power in a very complete degree. Certainly, if you apply to a part of the body which is undergoing mortification, cloths dipped in a solution of chloruret of soda, or of lime, of a sufficient strength, you will find that the unpleasant smell will be completely removed; and if you sprinkle a little of this solution over the bed-clothes, it will be of considerable service.

Now the French have gone further than this; for they say, not only are these agents capable of destroying the effluvia arising from mortification and other diseases, but that they also tend to arrest the progress of mortification—that they stop the diseased action. If they did so, they would certainly be very important remedies. Mr. Alcock has introduced these circumstances to the notice of English readers in an interesting publication, in which he has collected the information principally from the French writers; and he is of opinion, that those agents possess a power of acting on the living parts which are threatened by mortification, such as to check the progress of the disease. In instances where I have seen them used, it appears to me that they are merely to be regarded as disinfecting agents —that is, as destroying the effluvia; but that they do not at all possess the power of checking the progress of mortification by any agency they convey to the living parts over which mortification is impending.

The internal treatment would, of course, be various, according to the condition of the general symptoms. In the case of acute inflammation, you may have to employ antiphlogistic means. In a case where the symptoms have assumed the typhoid character already mentioned, you would employ means of quite a contrary kind. Bark, stimuli, wine, brandy—all means, both dietetic and medicinal, which are capable of supporting the strength of the patient, become necessary. Under such circumstances, however, we cannot lay down any one general plan.

We come now to the third indication—the means of favouring the separation of the dead parts from the living. While the mortification is extending, we cannot accurately trace the boundary between the dead and the living parts; they seem to be confounded. At all events, near the edge of what we conceive to be the dead part, we find that the living parts, if not actually black or brownish, are perhaps of a dark livid tint, and seem just passing into the more decided colour which indicates mortification. The surrounding living parts are perhaps vesicated; the cuticle is raised by serous fluid under it, and it is by this process mortification creeps on, attacking fresh parts in succession. But, when it is stopped, we see a distinct edge pointing out the part; and we see the immediate portion adjoining that distant edge, assuming a brightish-red colour. In fact, the boundary of mortification manifestly shows the occurrence of inflammation, and then the absorbents begin to perform the act of separation. An ulcerated line occurs at this part, which gradually deepens, and thus the mortified part is by degrees separated. Now, in order to favour, by local application, this process, all we can do, in general, is to keep the part at rest, and to keep it covered by a soft warm poultice. I believe bread, or linseed, answers the purpose. Sometimes it appears that the natural process by which the separation is effected, does not go on so actively as is desirable; that the living parts which adjoin the dead are languid; and that the separation is better under the employment of local stimuli. An old application of this kind consists in the admixture of yeast, or grounds of stale beer, with bread or linseed powder, to make a poultice, which is called the *effervescing cataplasm*, or yeast poultice; and this may be employed more effectually by using oatmeal, instead of bread or linseed meal; yeast is employed instead of water. The dilute nitric acid lotion may be occasionally applied along the boundary between the dead and living parts; under such circumstances, four, six, or ten drops, to an ounce of distilled water, may be made use of. The yellow or black basilicum, or stimulating forms of ointment, are well fitted to assist the object in view; and the balsam of Peru is an eligible stimulus to be applied on such occasions. It does not excite the part very considerably, and it tends very much to correct the fetor connected with the process of mortification. In some instances, powdered camphor may be advantageously strewed on the part in which the process is going on. It is rather a powerful stimulus, and may be employed where the part appears particularly languid. These are the means by which we can favour the separation of the *mortified* from the *living* parts.

Then as to the question of *removing the dead part in case a limb is affected by mortification.*—The general rule has been not to perform amputation until the boundary between the mortified and living part is decidedly established, and no doubt this is a very wise rule. In instances where an entire limb is the seat of mortification, it will generally be found that the state of the constitution at the time has had much to do with the occurrence, and the progress of the mortification; therefore, until that process is decidedly arrested, you may suppose that the same disposition which has given rise to the occurrence of the complaint, still exists, and consequently, that if you amputate a limb under these circumstances, the wound which is made by amputation will take on mortification. On the general experience of this circumstance has been grounded the rule I have laid down to you, not to think of performing an operation until the boundary is completely established. When the process of mortification has thus come to a natural conclusion, you may suppose that a more healthy condition of the body has occurred, and you may expect that the wound, if you perform amputation, will go through the natural process necessary for its cure. I have seen an instance in which the toe, for example, has been the seat of mortification, where the condition of the limb has appeared quite favourable, free from any thing like disease; where the patient has seemed in a tolerably good healthy state, and where, from the very slow progress of the affection, it has been supposed that the disposition to mortify was worn out: in instances of that kind, where amputation has been performed, although the boundary was not clearly established, frequently—I believe I may say generally—the process of mortification has come on in the stump, and the operation has terminated without any advantage. So that in all instances where mortification arises from, or is kept up by internal causes—by an unsound state of the constitution, you must not think of performing the operation of amputation. But in certain cases of mortification arising from external causes, this rule may be relaxed.

Having addressed to you these general observations upon mortification, I have a few words to say respecting some particular forms, or kinds of mortification; and first, of the mortification that is produced by the application of cold. Cold, whether applied to the body generally, or whether to any particular part, has, in a very decided way, the effect of diminishing vital action; and thus, in countries that are very cold, where persons frequently have certain parts of the body exposed to a temperature much below the freezing point, and that for a considerable time, it is by no means uncommon to have such parts chilled, and, in fact, actually frozen. As this is a common occurrence in those countries, experience has taught the individuals what is the proper mode of proceeding when a part of the body is thus frost-bitten or chilled, in order to ward off mortification. It has been found that, if a part of the body thus chilled be suddenly brought to a fire, and its temperature suddenly raised, it will inevitably mortify, and that the only mode to prevent this is to raise the temperature of the chilled part very slowly, by the application of snow, or ice-water; by rubbing it with these the freezing is removed; and then, though all the vital movements had ceased for a time, although the circulation had been completely put a stop to, those movements are again restored, and the part recovers without injury: that is the treatment in frost-bites.

In respect to the lesser mortifications, that arise from local injuries, there is little to be said; the occurrence is unimportant, and no particular rule can be laid down.

The mortification which arises, however, from *serious local injury*, and which affects an *entire limb*, is a case of very great importance. This comes on in consequence of extensive bruises, or lacerations; in consequence of very severe gun-shot wounds; in consequence of bad fractures, and those, perhaps, complicated with dislocation in the extremities of the body, fractures in which there are extensive lacerations and bruisings of the soft parts, and perhaps injury to some of the principal vessels and nerves of the limb. Under such circumstances mortification will come on suddenly in an entire limb. The limb swells, loses its natural colour, becomes livid, black, and blue; loses its temperature; a thin and offensive sanies is found disseminated through its textures; the cuticle separates; vesications occur, followed by a sanious discharge; and those changes, within a very short time, will extend to the whole of a limb, and quickly reach the trunk of the body. This constitutes the case which is called *traumatic gangrene*, that is, gangrene consequent on a wound—gangrene of an entire limb, produced by violent local injury.

You may judge of the rapidity of the affections in those cases from what is mentioned by Larrey, who has given several cases he has observed principally of gun-shot wounds. He says he has seen, in some instances, the process of mortification reach the trunk within six hours after the injury happened. Under these circumstances, if such a case be left to itself, death is inevitable. The one question is, whether, provided we see the case sufficiently early, we may attempt to save the patient by amputation? As for waiting for a boundary, waiting for a cessation of the mortification here, that is quite out of the question. If you do that, the patient is lost. This, therefore, is a case in which it becomes questionable, whether we ought to adhere to the general rule I had previously laid down to you. Now we must consider, not merely the state of mortification of the limb, but also the condition of the patient's constitution in whom it occurs. There are certain individuals of bad constitution, in whom traumatic gangrene may take place, and in whom the mere state of the constitution alone, independent of serious local injury, would be a sufficient objection to the performance of an operation. I mentioned to you, in a former lecture, having seen one of Whitbread's draymen, in whom, from a simple graze on the shin, mortification had extended, in eight-and-forty hours, to the whole of the limb: in an individual in whom so serious an effect could be produced from so slight a cause, amputation would be out of the question. About three or four weeks since, I was sent for into the country, to see a gentleman, without being aware of the case I should have to witness; and I was surprised, on going into the room, at the look of the patient. He began to speak to me, but he appeared to be hardly able sufficiently to command the muscles about his face, to enable him to make the statement he desired. I put my hand on the pulse, and found it sinking, the hand was cold. I found he had an affection of the other arm which I was desirous of looking at; when it was exposed I saw that it was livid, found it cold, and the process of mortification extending up the whole arm. On inquiring into what had occurred in this case, I found that the gentleman was not aware of any thing to account for the state of this limb, except that some one who passed him in the street had struck him on the elbow a few days before. He had applied to a medical man, who had sent his assistant, and he, not thinking there was much the matter, had applied some leeches. The medical gentleman, however, by whose desire I was requested to see the patient, had not himself seen the patient till within less than eight-and-forty hours of the time that I saw him. I saw him on the Saturday evening, and he had seen him on the Thursday, so that, within that short time, this traumatic gangrene (if it was such, and I cannot consider the case in any other light than I have mentioned,) occurred from such a cause. It is obvious, that if it occurred from so slight a circumstance, it would be of no use at all to amputate such a limb. In the feeble state into which he was reduced, the mere operation would have been sufficient to extinguish life; in fact, that gentleman died in four-and-twenty hours after I saw him. Now, a good many years ago, an Irishman was brought into this hospital, who had fallen from a scaffolding three stories high. He did not fall directly from the third story to the ground, but he fell from the third to the second, from the second to the first, and from the first, I believe, to the ground; however he was very seriously hurt. He was not under my care, for I was not then surgeon here. I came to the hospital soon afterwards, and I was requested to see this patient in about three days, I think, after he was brought in. On the preceding night, the dresser, under whose care he was, had left him well, for he had seen him just as he was going away at night. He had then no complaint. In the morning he told the nurse that he had been in a dreadful state of pain all the night; she went to the dresser and told him of it, and he asked me to see him. I went, and found the wrist and fore-arm up to the elbow, enveloped in a bandage, which, although perhaps not too tight at the time of application, was exceedingly tight then. On feeling the hand below it, I found it was cold and dead. On taking off the bandage, the arm was completely livid and dead also. The upper arm, or at least the lower part of it, was perhaps not exactly in a state of mortification, but approaching to it, with those appearances reaching up to the shoulder. This had all come on within from ten to twelve hours. Now here was a stout young Irishman, with a good constitution; and I thought him, therefore, a good subject to try to save by operating upon; and although I cannot say that I considered the integuments were entirely free from colour, yet I considered it right to give him the chance, and I removed the arm at the shoulder joint. The part where I made the flap, in performing the operation, was filled with a sort of serous fluid. This case, however, succeeded perfectly, and the man recovered. I have seen one or two other cases in which the operation has been performed in traumatic gangrene, before the mortification had stopped, and manifestly before the line of demarcation had taken place between the dead and the living parts. Several such cases are recorded by Larrey in his "Memoirs of Military

Surgery," and I believe there are other catalogues of such instances, so that I have no hesitation in stating that, in a case of healthy constitution, where the gangrene arises from a simple external cause, you may disregard the general rule I before mentioned, respecting the performance of amputation, and remove the limb, with the effect, in many cases, of saving the patient's life, which otherwise is inevitably lost, from the very serious nature of the affection, and the rapid way in which it extends over the limb.

In elderly persons, mortification frequently attacks certain parts, more especially in the changed state of the arteries of a limb, to which I have already had occasion to advert. Mortification of this particular kind has been called gangrena senilis—the gangrene of old age. A portion of one of the toes, or some part of the foot, becomes livid; the cuticle is raised by sanious fluid; vesication takes place; the patient experiences, perhaps, little or no pain, and when you open a vesicle, on cutting through the cuticle, you will not be surprised to find that the skin, which is exposed, has completely lost its vitality. The part is completely mortified; it goes into a state of dry gangrene. Perhaps the dead portion may be separated from the limb, and leave a healthy sore that may heal; but generally you will find that mortification will occur in some other place, and very commonly that from the part at which it begins, it extends further; so that, generally, when you see an occurrence of that kind, you will find that the patient will die from it, although the mortification in the first instance shall appear to be very slight, and shall take place with so little local disturbance, and with so little constitutional affection, that you are perhaps hardly aware of the dangerous nature of the disease. Sometimes this gangrene of the toes of old persons is attended with very considerable pain; and it is this form of affection in which Mr. Pott very warmly recommended the administration of opium in very large doses, on account of the pain. With regard to local treatment, I believe you cannot do better than keep the part at rest, and covered by a soft poultice, assisting the separation by some of the means I have mentioned.

I have told you that, in general, those cases terminate fatally. When once you see that livid vesication and separation of the skin, you may consider them evidence of the deranged constitution of the individuals in whom the disease occurs, and however trifling it may appear at the time, you will seldom find that the patient escapes. Some time ago I saw a patient in whom this had taken place on the under surface of the last phalanx of the great toe. He was a gentleman between fifty and sixty years of age, who had been in the habit of living well; by no means working hard, but indolent, and a free liver; he was corpulent, and had got a good red pimply face. He was quite surprised that any thing should be wrong with his toe. He had lived well, he could still eat and drink well, and he thought his health should be good. This affection came on very slowly, and gave him but little pain. When I saw him, and explained the necessity of keeping in the horizontal position, and perhaps in bed, it was with great difficulty he could be prevailed on to refrain from walking about. However, he was persuaded to do what was necessary, and the mortified part separated, leaving a completely clean, granulating surface, that appeared to be healing; when, one day, all of a sudden, apparently without any cause, mortification of the whole of the rest of the toe occurred. A groove took place, and all the soft dead parts were separated, and I cut through the bone with a pair of pincers. The surface appeared clean, and there was no reason to suppose that it was unhealthy. However, soon afterwards a livid redness formed a little further up, deep-seated suppuration took place, with ulceration, and the discharge of a fœtid pus in the foot, and thus he was carried off. In the course of the summer of 1828, I saw a gentleman about the same age, and of a similar habit of body, in whom mortification of this description took place on the side of the heel—in size about a quarter of an inch one way, and three-quarters of an inch another. In this gentleman, the process of separation took place in about a couple of months; he got well, and remains so to the present time. Now that is an instance to show that these mortifications are not invariably fatal; but, inasmuch as they are generally preceded by that very unhealthy state of the constitution, inasmuch as they generally occur in persons whose health is impaired by sedentary and indolent habits, and free living, you will usually find they terminate fatally; although, for a time, the natural process of separation may take place, and the case may seem to be on the point of doing well.

I just mentioned to you, cursorily, that mortification takes place from the application of animal matter to the surface of the body, as under the form of malignant pustules. Under this term, a certain condition of the skin has been described by continental writers, and I fancy it is more common with them than it is with us. They speak of it as occurring in butchers, and persons having to do with hides; and they say it takes place more frequently where butchers slaughter some kinds of animals, that die under certain states of disease. I have only seen one instance of it, and I just mention it, that you may know what the thing is. The person in whom it occurred had, I think, been employed in Leadenhall Market, and had to overhaul parcels of old hides that came from South America. One of them swept along his cheek, he was aware that it touched it, and left something there, but did not take much notice of it. However, his cheek, about an inch and a half below the eye, first of all became red and swollen as if by œdema; then, rather more than an inch of that part became shining and still redder; it then turned black and mortified, and, in fact, sloughed. A pretty deep slough formed on the cheek of that individual; suppuration took place in a very natural way, and the part cicatrised. He lost a great part of the cheek, and the lower eyelid was rather pulled down by the cicatrisation. There was no very particular circumstance attending it, but it is a singular kind of example of the immediate deleterious effect which certain animal substances are capable of producing on the body.

LECTURE XIV.

Ulceration. — Absorption. — Granulation. — Treatment.—Reproduction of lost Parts.

THE matter of abscess, gentlemen, advances, in consequence of the removal of the intervening substance by the absorbents, to the surface of the body, or to the surface of those internal cavities which have external outlets, such as the digestive, the respiratory, the urinary or generative organs. A similar progress towards the surface of the body is observed in cases of aneurism, in the growth of which, not only are the soft textures removed, but often even portions of bone, when they impede the progress of the aneurismal tumour, are removed, and apparently with great facility, by means of the absorbents. This is an example (showing a preparation) of aneurism of the aorta, where there is a large cavity made through the sternum, and on one side through the ribs, by which the aneurism had advanced to the external surface. This again [exhibiting another preparation] is an aneurism of the descending aorta, and you perceive that the ribs and side of the vertebral column are in like manner removed by absorption.

In the same way tumours, although formed deeply in the body, that is, at considerable distance from the external surface, make their way outwards by the gradual removal of the parts which cover them. This is not only the case with tumours which form in the soft parts of any of the limbs, or of the trunk of the body, but even of those which form in the interior of bony cavities; for example, if a tumour forms on the surface of the dura mater, although its progress externally is arrested by the skull, it will cause absorption of the bone, and come through. This is an instance (showing the specimen) of that kind where a tumour has been formed on the internal surface of the dura mater. A quantity of the skull is removed, and the tumour has made its way through the bone and come out externally.

In all these various cases there is a gradual removal of the textures which intervene between the disease and the external surface of the body, or between the disease and the surface of some one or other of the mucous cavities of the body; the parts are removed by absorption. This particular process is what is called by Mr. Hunter "progressive absorption;" it is the removal by the absorbents of the intervening parts in the progress of the disease to the surface of the body. The term "progressive" absorption is, perhaps, not very happily chosen, to designate any particular kind of absorption; because all absorption is necessarily progressive, and this kind of absorption is not progressive in any higher degree than any other sort. But the truth is, that, in this instance, the advance of the disease to the surface of the body is progressive, and that, I suppose, is what Mr. Hunter meant. At all events, this particular kind of absorption is not more progressive than any other.

The removal of the parts by absorption in these instances is preceded by some degree of inflammation; that is, there is some previous thickening and consolidation of the textures, which are afterwards to be removed by the absorbents; the sac of the abscess, or of the aneurism, remains entire, and is the last to give way. There is no escape of the contents of either of the cavities into the parts that are progressively removed. The contents of the aneurism still remain barred and walled in as they were, the parts through which the advance is made being consolidated by a slight degree of adhesive inflammation, which precedes absorption.

A portion of the substance of the body may be removed, so as to occasion an external breach in the surface, or a portion of the surface of some internal organ may be removed in the same kind of way. The same process is observed in the separation of a slough from the contiguous living parts. You find that a groove takes place, first along the margin of the dead part; that this becomes deeper and deeper, and at last that it extends throughout the whole depth of the mortification, so as completely to separate the dead part from the living. This process is called, by Mr. Hunter, ulcerative absorption; that is, the removal of parts by the absorbents, where an external breach of surface is produced by the loss of substance; or, simply, it may be called ulceration.

Now this kind of absorption, like the former, is preceded by inflammation; the part is first red, hotter than usual, slightly swelled; interstitial deposition takes place into it, by which its textures become much consolidated and thickened; and by which the blood-vessels and absorbents, which, in the progress of the absorption, will afterwards have to be separated, are completely blocked up. In ulcerative absorption, as the loss of substance commences, of course, on the surface, the blood-vessels and absorbents which are in the part that is to be removed must be divided, and the adhesive inflammation which precedes the act of ulcerative absorption obliterates those vessels, so that there is no escape of blood or of fluid from them when the process of ulceration actually divides them. In this case of ulcerative absorption, there is the formation of matter in the breach of surface which is produced by it, and that circumstance distinguishes this from the preceding kind of absorption.

In progressive absorption there is no formation of matter as the parts are removed, nor is there any in what Mr. Hunter called intersticial absorption. But in ulcerative absorption, that is, where parts are removed in a way to produce external breach or loss of substance, there the removal is accompanied by a formation of matter on the surface that has been exposed.

Ulceration, then, may be stated generally to be the removal, by the absorbents, of a portion of the body, causing an external breach of substance, or solution of continuity, as it is technically termed, and accompanied by the formation of matter. The process of ulceration does not consist in erosion, as has sometimes been supposed; that is the textures of the body which are removed are not technically acted upon by any acrimonious or corrosive property of pus, because pus possesses no such property. It is a perfectly bland and mild fluid; it has no solvent power over the substance of the body; in fact, if pus had this acrimonious or corrosive power, there would be no limit to the mischief whenever ulceration commenced; for, in the case of ulceration, the surface is constantly moistened by pus; and if it were to continue to corrode the surface, there would be no limit whatever to the process of destruction. The progress of ulceration, the circumstances under which it arises, and the general phenomena of the affection, are very various—those varieties depending on the difference of structure in the parts which are the seat of the disease; on differences in the nature of the inflammation which precedes it, that is, whether t is common or specific, and on differences in the constitution and state of health of the individual who is affected. All extures of the body appear to be susceptible of ulceration. We ee this exemplified, when mortification has attacked an entire imb, and when the separation takes place by a natural process. uppose, for instance, that the foot and lower part of the leg vere mortified, and that the mortification stop in the middle of he leg, you will see that the cellular membrane, the ascia, the muscles, and tendons—blood-vessels, nerves, and ven, lastly, the bone itself, are all penetrated by the process of ulceration. A groove commences on the external surface, it xtends through all the soft parts, one after the other, and, nally, separates the bone itself. Thus you will have a kind f amputation performed by it, the ulcerative process extending rom the skin, first, to all the soft parts; and, finally, through he bone; so that you see the whole of the tissues that enter nto the construction of a limb, at all events are susceptible of his process of ulceration, or ulcerative absorption. But all parts of the body are not equally liable to it. The skin is the most prone to ulceration; thus the greater part of the ulcers, which we have an opportunity of seeing, are seated on the external surface of the body. Mucous membrane, perhaps, comes next in order, then the cellular tissue, the bones; and the rticular cartilages, although, from the great compactness of heir texture, you would suppose they would not be so liable to lceration, are very frequently affected by it. Fasciæ, tendons, nd ligaments, are perhaps the textures which are the least ubject to ulceration; and hence it is that they will resist, for time, the progress of absorption to the surface of the body, hen abscesses form under them.

We are best acquainted with the phenomena of ulcerations s they take place in the skin, because there all the circumstances in the process are obvious to our senses. The remarks, hen, which I shall have to make to you respecting the history of lceration, as it occurs in the skin, will be applicable, with some modifications, to the same process as it occurs in other textures f the body. I have already mentioned to you that ulceration s preceded by inflammation of the part. We find that a state f inflammation, and, generally, considerable pain, precede the rmation of an ulcer in any part of the skin. The surface be- omes red; it becomes preternaturally hot; it becomes more r less swelled, and then we find that it begins to ulcerate at ome one point or other. We observe that the cuticle becomes oosened, or perhaps it may be elevated into a small vesicle in ome part. The cuticle thus loosened and detached assumes a whitish appearance, and the skin ulcerates. While these changes are going on, the part is apt to take on a livid hue. When the detached and elevated cuticle is completely separated, we see a breach of the surface of the skin; there is more or less of an excavation formed, in consequence of the ulcerative process. There may be one single spot of this kind, or there may be several contiguous ones, which at length unite and form one excavation, and this goes on extending in its circumference and depth. We find, when we examine it, that so long as the ulcerative process is going on, and before the process of restoration has commenced, there is a manifest excavation, or loss of substance, in the part. We see clearly that some portion of the body is removed. There is a chasm—a loss of substance; and the appearance of this chasm shows the nature of the process by which it has been effected. It has a kind of irregular eaten appearance; and the textures exposed by it are, in some manner, reconcilable with the cavity of the ulceration. The surface is, perhaps, of a dirty whitish, or yellowish hue. There is sometimes the appearance of fibres or threads on the surface; sometimes it is covered with pus, at others by a bloody fluid. The edges of the excavated ulceration are sharp and defined, and the margin of the surface around is red, hot, and painful. This is the appearance which an ulcer in the skin presents in its spreading state—so long as the process of ulceration is going on, and before any steps have been taken to repair the mischief which it has produced. I should mention to you, that unless the process of ulceration is put an end to, it extends through the skin, completely destroys the cutaneous texture, and goes into the cellular membrane; it may be capable of passing through it, and affecting the subjacent soft parts; and, in fact, there is no limit to its progress, if it is not checked.

Granulation.—When the process of ulceration is checked, and when the removal of the textures of the body by absorption is put an end to, then we have a restorative process, by which the parts that have been removed are to be reinstated or reproduced. The process of restoration is accomplished in nearly the same way under four different circumstances; that is, *first*, in breaches produced by ulcerative absorption in the external surface of the body; *secondly*, in the ulcerative surface which is produced after the separation of a slough; *thirdly*, in the exposed cavity of an abscess, when this has been opened, or when it has become exposed by bursting; *fourthly*, in ulceration on the surface of wounds in which there is loss of substance, or where the sides of the wound are not brought in contact. The process of restoration, by which the surface is restored in each of these four cases, is essentially the same.

The new matter by which the chasm is to be filled up, consists at first of a soft, red substance, which on its surface is elevated into small prominences of a roundish or pointed figure, differing in size. This soft substance on the surfaces I have mentioned to you, is kept moist by the secretion of pus. Now these soft prominences are called granulations; and their formation,—in a word, the process altogether, is termed the process of granulation. Although the secretion of pus is a common occurrence in that process of restoration, by which the chasms produced by ulceration are to be supplied, I believe we cannot say that it is an universal one. It takes place in the great majority of instances, but I believe that, in the case of ulceration of the articular cartilages of bones, no secretion of pus is to be observed. And certainly in the case of ulcers of the cornea, we cannot observe any thing like a secretion of pus. The secretion of pus, then, is not what can be admitted into the definition of ulceration. The definition of ulceration has, probably, turned on the breach of the surface, or of the organ—the cavity or solution that is produced by ulcerative absorption. We may, to be sure, add to the definition, that it is attended with deposition of pus in the majority of cases.

Now the solution of the description, which I have just given of the process of ulceration, is this, that coagulable lymph is effused on the surface of the chasm, and that this rapidly becomes organized; that blood-vessels, absorbents, and nerves, are formed in it, constituting the restorative process by which the surface of the body is to be repaired, when it has been broken by ulceration. Here you see that the process is very similar to what goes on in cases of inflammation. I have already said, that, under inflammatory action, coagulable lymph is effused into a part; that the lymph becomes a receptacle into which blood-vessels, absorbents, and nerves, are propagated or formed; and thus the parts are thickened, or permanently increased. In the reparative or granulatory process, you have essentially the same, that is, effusion of lymph on the surface of the sore, and then the formation of blood-vessels, absorbents, and nerves, to make it a new and organized part of the body, and calculated to perform particular functions.

Now as the process in this view of it is so much similar to what takes place in inflammation, in fact scarcely to be distinguished from what Mr. Hunter calls adhesive inflammation, you will not be surprised at observing the actual existence of inflammation. The surrounding parts are redder than natural, there is a sensible increased heat in the part; and Dr. John Thomson says, he has sometimes attempted to measure the comparative temperatures of the parts by the thermometer, when this process has been going on, and that he has found, in the immediate neighbourhood of a healing ulcer, the thermometer has risen two degrees higher than in the contiguous parts of the same limb.

I have already mentioned to you, that we use the terms lymph, coagulating lymph, and coagulable lymph, rather vaguely. The truth is, our knowledge on pathological subjects is not sufficiently accurate to enable us to employ these terms in a very strict sense. Heretofore, the substance by which the breach of an ulcer is filled up—that which is effused on serous membrane in a state of inflammation—that which is poured into the interstices of a part under adhesive inflammation was called coagulable lymph. This term seems to imply, that the lymph should be in a fluid state, but that it would, under certain circumstances, undergo coagulation. Mr. Hunter, I believe, commonly called it coagulable lymph, which I think is the preferable term, for it generally coagulates. Thus, on a serous membrane, it forms masses of a soft substance, but yet in a coagulating state. Dr. John Thomson's work on inflammation contains a very valuable collection of facts relating to that process and all its effects; it is a work which I think you will find very useful, but I believe it is out of print, and I think it would be a valuable service to the public if he would now reprint it with such additional information and facts as he may have collected; he speaks of this lymph under the term of organisable lymph, for it is a striking circumstance, that when it is effused on any part of the body, it very speedily becomes organized, or made into a living texture, to form some part of the body. However, I merely make these remarks to show you, that, under the epithet of lymph simply, or coagulable lymph, or coagulating lymph, or organizable lymph, the same thing is meant, as I have had occasion already to mention to you repeatedly in the course of these lectures.

This, then, is considered to be the basis of the healing process,—that soft substance formed by coagulable lymph. I have mentioned to you, that very soon after this is deposited, it receives blood-vessels, absorbents, and nerves, so that it becomes generally organized.

Respecting the blood-vessels in these granulations, you can be at very little loss for proof; because, in the first place, there is the red colour, which entirely depends on the blood they contain; and this shows that they not only possess blood-vessels, but that they are extremely vascular. Under many circumstances they are of a very florid colour, like that of arterial blood; under other circumstances the colour is more livid, like that of venous blood. However, by looking attentively on the surface of a healing sore, you can see the blood-vessels with the naked eye; and if we employ the microscope, we can see them in great numbers. If the part which is healing be injected with minute injection after death, the sore is rendered completely red, as if it were one mass of blood-vessels. A very slight degree of violence applied to it produces bleeding, so that the vessels approach very near to the surface. Further, we have the evidence of blood-vessels in it by the presence of pus, which blood-vessels only are capable of furnishing. It is equally clear that these granulations possess absorbents, as they frequently diminish in size, or are entirely removed from the surface of the wound. By absorption, certain medicinal substances applied to the sore will produce their effects on the urinary organs, just as they would if taken into the stomach. Thus, mercury applied in the form of ointment, or in another state, in the form of red precipitate, for example, sometimes salivates a person in consequence of being absorbed. If arsenic is applied in any thing like a strong form to a sore, it may produce stupefaction, and, in fact, death, as it would if taken into the stomach. Opium will sometimes produce its constitutional effect on being applied to the surface of a sore. The existence of nerves in granulations is rendered obvious by the pain—frequently the very acute pain—which is produced on touching or offering any violence to them. In fact, the granulating sore is a part very sensitive, though it is a part very newly formed, springing up within a few days. You will find it has that supply of nerves which will render it very sensitive indeed, so that persons will sometimes feel very acute pain even from the slightest touch of these granulations. This function of a granulating part, then, and its organization, that is, its penetration by blood-vessels, absorbents, and nerves, take place in a much shorter time than you would expect; in fact, in so short a time, that when we look at the blood-vessels, and see these produced in twenty-four or forty-eight hours, we are at a loss to explain the mode by which this organization of the coagulable lymph takes place; indeed, we do not know whether the vessels are newly formed in the granulations, or whether it is an extension of the vessels from the surface on which the lymph is deposited; and we are equally at a loss to know how these granulations acquire their supply of nerves. These are points on which, at present, we possess no clear or distinct information.

When two granulating surfaces are brought together and kept in contact, they will unite, the vessels belonging to them inosculate and grow together, and that union takes place very rapidly. I remember an instance of a patient brought into this hospital, in whom a considerable flap of the scalp had been detached by an accident. It was necessary to apply poultices to the part, in consequence of the injury which the surfaces had received; and, after a time, under the application of poultices and the other means of treatment, the injured surfaces became clean; they formed regular and granulating surfaces. There was a flap of scalp, the internal surface of which was regularly granulated, and a corresponding granulating surface on the skull, on which the flap could be applied. The flap was applied in exact apposition with the granulating surface of the skull, and in twenty-four hours after the flap had been placed there, it stuck "as close as wax," as we say; the adhesion of the granulations, the union and inosculation of the vessels in that time, became quite complete. We have another example in which opposed granulating surfaces become united in the instances of some accidents which happen to the eye. When substances, such as lime, are thrown into the eye, if they affect both the eyelids and the globe of the eye, and produce ulceration, you have the granulating surface of the eyelid in contact with the granulating surface of the globe; and the disposition to unite is so great, that you cannot, by any means you can employ, prevent the adhesion of the two—you cannot prevent the accretion. This has produced the term *symblepharon*, from the Greek, meaning an accretion of the eye and the eyelid. I have seen this happen where great pains have been taken to keep the parts from adhering, for frequently it is attended with very serious consequences, more particularly if the eyelid is united with the cornea, it is attended with the loss of sight, and I have found it impossible to prevent the globe of the eye and the eye-lid inosculating in this unfortunate way.

The power of forming granulations has been supposed to be a property pecular to cellular substance. It takes place, as I have mentioned to you, in almost all parts of the body, and you will, therefore, at first doubt whether it can be considered as a property peculiarly belonging to the cellular tissue. But you must recollect that cellular tissue enters into all parts of the body. It is the kind of basis or ground-work of the whole structure. It would be difficult to determine in each case whether granulation is owing to the cellular tissue, which enters into any particular part, or whether the particular substance of the part or organ itself, such as the fibres of muscles, have any share in forming the granulations. We find, however, that granulations are always most abundant where cellular tissue is the greatest. Thus in wounds where the limbs are affected, or in wounds produced by burns, we find that ranulations are produced in the cellular tissue with great apidity, and that they rise above the surface of the wound, nd, in fact, that it is with great difficulty we can keep down, nd repress them to the limits in which we wish them to be estrained; so that I think it probable, that the notion which vas first broached by Bichat, that granulation is a property of he cellular tissue, is a correct one. When the granulations ise in this abundant and luxuriant way above the surface of he sore, it constitutes what persons in common life call *proud lesh.*

Cicatrisation.—When the chasm of the ulceration is completely filled up by these granulating processes, then another process commences, by which the surface is to be skinned over and repaired. The granulations, first, fill up the cavity of the ulcer to a level with the surrounding sound parts; and we then find a thin smooth *pellicle*, extending over the granulations from the edge of the sound surface; and when this *pellicle* has extended over the whole of the granulations, the secretion of pus in that part ceases. At first we observe just a thin margin of this kind on the very border or edge of the sore. You find the *pellicle* extending from the edge of the surrounding sound skin, not commencing at any other part of the sore, and it forms just a thin rim round the margin of the ulcer. This *pellicle* gradually extends from the edge to the centre of the sore, and ultimately it covers the whole of it. The secretion of pus is then entirely stopped; and, in fact, it is said to be healed. The process by which this *pellicle* extends, is called the process of *cicatrisation;* and the surface that is left in this way is distinguished by its smoothness and red colour, by a sort of compactness which distinguishes it from the natural skin, and by the non-appearance of those lines which belong to skin under other circumstances. That surface is called a *cicatrix*, which is equivalent to the common expression of *scar.* The *cicatrix*, or scar, when it is first formed, is redder, and apparently more vascular, than the surrounding skin. It is very thin and delicate, so that it is easily broken; gives way easily under force, and breaks or bleeds. But, in process of time, this redness disappears, and, in fact, perhaps the *cicatrix* becomes rather paler than the natural skin, and that thinness which renders it so liable to be broken, becomes changed into rather a hard substance, and difficult to be broken; so that, ultimately, the *cicatrix* is very different in appearance to what it is immediately after the skinning of the part is completed. During the period that the extension of the *pellicle* is going on, the granulations undergo absorption; and the consequence of this is, that the surrounding skin is elongated, and drawn towards the centre of the sore. The granulations are absorbed in proportion as the *cicatrix* forms over them, and thus the surrounding skin is drawn in, and usually becomes more or less puckered, in consequence of this drawing together. The effect of this contraction of the skin is so considerable, that the *cicatrix* is, perhaps, not more than a third or a fourth in extent, compared with the original size of the sore. A sore may have been of four inches in length; and when it is completely healed may, perhaps, be reduced to two inches, or to one inch in length, and proportionally reduced in all its other directions. Now this is a circumstance of great consequence, because the *cicatrix* which remains after ulceration, is a part of weaker vitality than the other surfaces of the body, and, of course, it is important to have that weaker part of as little size as possible. This absorption, and the drawing together of the neighbouring parts of the skin over the sore, accomplishes that very useful end.

We see, then, that the granulations which fill the sore during the healing process, serve the particular purpose of this restoration, and then they are removed. They seem to constitute a kind of temporary structure, organised in order to answer a particular end, and are disposed of as soon as that end is obtained.

Reproduction of Lost Parts.—Now a question has arisen respecting the degree in which lost parts of the body are reproduced. When surgeons observed a large excavation in a limb, for instance, produced by ulceration; when they saw granulations in that excavation, and the part cicatrising over, they concluded that that substance which had been lost, in consequence of the ulceration, was restored or reproduced by the granulations; and they fancied that in each case the particular textures that had been removed in the process of ulceration, were restored in this way. For instance, that muscle was deposited, if muscle had been involved in the ulceration; and that cellular membrane or skin, where such had been removed, &c. Others took a different view of the subject, and stated, that the filling up of the chasm in each case arose from the subsidence of parts which were preternaturally swollen around; and they even denied the process of reproduction altogether. That reproduction takes place to a certain extent there can be no doubt, for we see a quantity of new substance under the form of granulations deposited in the chasm formed by ulceration, and filling it up. That there is a deposition of new matter, to a certain extent, cannot be contested. However, the limit of reproduction is easily ascertained in the human body. No entire part is reproduced when once lost. The only exception, perhaps, to this, is in the case of the long bones of the body, the shafts of which may perhaps be entirely reproduced when they have perished in the case of necrosis; but I do not know any other case of any other part of the body, in which an entire organ or part is reproduced. We see very commonly, and very obviously, that if a piece of the finger is cut off, if it is separated at the last joint, or if any other part of the limb is removed, that it is not reproduced. In this respect man and the more complicated animals differ materially from those of a more simple structure. In the lower class of the animal kingdom, we find that the reproductive power extends to the restoration of an entire and complete organ. It is very well known, with respect to the crab and lobster, that one of their claws is reproduced when it has been removed; that a new one sprouts out, and gets larger and larger, until there is an entire claw; and in the case of some of the lower animals, such as some of the molusca and the reptile tribe, even complicated organs, may be reproduced in this way. But this is not so with respect to human beings and the higher order of animals: here no entire part can be restored. Parts that are divided can be reunited, and the parts constituting the union, though they do not exactly correspond to the original tissue, answer every requisite purpose. A divided muscle may have its ends united by a new substance, which we should easily recognise from the original substance of the muscle; in a tendon the same; but yet, in each of these cases, the tendon and the muscle are capable of executing the same function as originally. Even a nerve can in this way be reunited, and have its functions restored. Therefore the breach produced by ulceration can be filled up and repaired by a material which answers all the purposes, though it is not exactly like the original structure. Any one could distinguish, by the appearances, a scar or cicatrix from the natural surface of the skin, but the surface that is thus formed answers the end perfectly well. But although the breach from ulceration is filled up, and although that loss of substance on the surface of the body is renewed, you do not find that the same textures that have been destroyed on the surface of the body are reproduced; for instance, if the cellular membrane between the skin and fascia is destroyed by ulceration, the skin is afterwards closely adherent to the fascia instead of being separated from it. If the cellular tissue and fascia be destroyed, then the skin will be closely attached to the muscles; and in the same way skin, or muscle, or both, become firmly attached to bone. So that it is only in a limited extent that this power of reproduction exists in the human body.

Treatment.—With respect to the treatment of ulcers, under the circumstances I have now mentioned to you: in the first place it is necessary to remove that inflammatory disturbance on which the commencement and the progress of ulceration depend; and, together with other measures that are necessary for that purpose, you will probably find it expedient to cover the part with a soft poultice. When the inflammatory disturbance is at an end, and when the process of reproduction has commenced, really the surgeon has not a great deal to do; nature performs the restoration, and it is enough, perhaps, if we take care not to do any thing that can interrupt her operations. The part must be kept at rest, and it must be covered in such a way as to protect it from any of the external influences that might be injurious to it. It should be covered with a soft poultice, made of bread or linseed; and when the process of granulation is somewhat advanced, this should be replaced by simple dressing, such as soft tent or lint covered with simple cerate or any unctuous application, and confined with a bandage. This is pretty much of what is necessary in point of treatment, in the case of ulcers generally; and thus treatment turns, as you see, on two points; first on removing the inflammation, which is the cause of the ulceration; and, next, in keeping the part and the patient quiet, while nature is performing the process of reparation. In respect to the latter point, I believe I need not observe to you, (for it is a rule that belongs to the treatment of all cases,) that you must pay such attention to the diet as will tend to keep the patient in the best possible state of health.

I should have mentioned to you, in speaking of the process of granulation, that a certain degree of exposure of the surface to the air, is necessary for its commencement, and its successful prosecution. The surface of an entire abscess does not granulate; but when that abscess comes to the surface of the body, and when it has been opened or exposed by the natural process of bursting, granulations will commence in it. It will never begin to granulate while it is entire. In the same way fistulæ, or sinuses, will not cure while they are entire. But if we slit up the fistula, so as to make an external surface, granulation then commences; and when it does this we find it necessary to keep the part moist by a soft dressing, in order to prevent it from uniting at the sides before it unites at the bottom. Hence we find that when abscesses extend deeply, they heal much more slowly and difficultly than when they are seated superficially. If an abscess is just under the skin, after it has broken, or you have punctured it, it heals in a very short time; but if part of it is seated deeply in the substance of the limb, then the process of healing does not take place at all hastily, it will remain a long time fistulous, and there is great difficulty in bringing it into the healing state, so that a certain degree of external exposure is necessary for bringing it into this condition. When I say a certain degree of external exposure is necessary, you are not to understand that the part is to be left open to the air, I mean that the body should be exposed in its surfaces. If it is on the exterior of the body, it must be left exposed with respect to its internal surface, but you must protect it from the external air and all those disturbances which are likely to interfere with the process of healing.

With respect to the varieties of ulceration, their various modifications, and different treatment, we must postpone that subject until the next lecture.

LECTURE XV.

Ulceration.

We observe numerous and important modifications in the character and progress of *ulcers*, which necessarily require corresponding differences in treatment. *Ulcers* may be divided, in the first place, into common and specific; the latter, such as those of a carcinomatous, syphilitic, and scrofulous kind, will be considered in other parts of the Course; but even the common ulcers, that is, those which arise from ordinary causes in constitutions otherwise healthy, are by no means uniform in their appearance or progress. The character of an ulcer in its progress towards healing, is often modified by its position in the body. Thus, ulcers that are situated on the trunk, that is near to the centre of circulation, heal more quickly than those on the extremities; and those which occur on the upper limbs, more quickly than those on the lower limbs, the dependent position of the lower extremities being unfavourable to the return of the venous blood. The general state of health exerts considerable influence over the progress of ulcers; thus, the appearance of a sore is a tolerably good criterion of the state of the health of the individual in whom it occurs. If a person with an ulcer is seized with fever, you will quickly find a very important change in the state of that ulcer. A healthy ulcer is one in which the curative process is going on favourably, especially in an individual of healthy constitution. The newly deposited substance in such an ulcer, is of a firm consistence, the granulations are small and pointed, and do not rise above the level of the surrounding skin. The colour of the granulations is florid, as if the capillaries contained arterial blood; but even in an ulcer of this description, the colour will depend much upon the attitude of the limb; for instance, if the colour of the granulations be florid while the limb is in the horizontal position, supposing it to be the lower extremity, if you hang it down it will become livid, and some of the vessels may give way, and it will bleed. The pus secreted on such a sore is thick, whitish, and moderate in quantity.

The treatment of a sore that is proceeding in this way, you will immediately perceive, must be very simple; you have only to cover the sore externally by a soft poultice or simple dressing, and a bandage, and allow Nature to go through the process, which she will perform well. It may happen that the granulations will arise a little above the skin, and this may for a while deter the healing process; for cicatrisation, which is the elongation of the sound skin over the ulcer, and which never takes place except from the sides of the wound, may not go on, and it may therefore be necessary for you to apply an escharotic, such as the sulphate of copper or the nitrate of silver, over the wound.

Indolent Ulcers.—Indolent ulcers are seen on the lower extremities of old and enfeebled subjects, especially after a long application of poultices, or similar remedies. The granulations of such sores are large, painful, and flabby, or spongy, and there is a copious discharge of thin pus from them. The limb generally is swollen—œdematous. The appearances in fact, of the sore and the limb generally, are those that mark a want of vigour in the parts. I have already adverted to the effect which position has in regulating the movement of the venous blood, and thus in influencing the appearance of ulcers. Of course the horizontal posture of the limb, and indeed of the body, will be more favourable to the return of venous blood from the lower extremities than the perpendicular posture; and hence you might suppose that a sore, with the characters I have described, would be best treated by the individual being always kept in bed. No doubt this position favours the return of venous blood, and the ulcer, *ceteris paribus*, is more likely to heal; but to confine a patient always to bed, because of merely having a sore on the leg, is objectionable; and the mere confinement to bed is not sufficient to answer all the purposes in such a case. We find that pressure has a very great effect in promoting the return of the venous blood, and thus it has a most beneficial influence. For instance, when the vessels of the limb are very much distended, and tumefaction extends in the limb throughout; when the leg is swelled and painful, so that the patient cannot put it to the ground and walk, if he has it bandaged from the toes upwards, he will immediately find that he can put it down and stand upon it.

The main point, then, in the treatment of indolent ulcers, consists in the application of external pressure, which may be made either to the limb generally, or to that part in which the ulcer is seated; but the most advantageous mode of employing it is to the entire limb.

Pressure may be made in this way by means of a bandage of calico, or flannel, applied generally, uniformly, and as firmly as the patient can bear it, from the toes up to the knee; and the application of such a bandage, if it be judiciously applied, aided by simple applications to the part affected, will often do all that is necessary towards healing sores of this kind. However, of late years, we have been in the habit of employing not only this general pressure, but also, more particularly to that part of the limb where the sore is, pressure by strips of plaster. This is a mode of treatment which was adopted by the late Mr. Baynton, an eminent surgeon of Bristol. You spread linen or calico with diaculum plaster—the *emplastrum plumbi*, or adhesive plaster, which is the same thing rendered a little more adhesive by a small quantity of resin, or what you will find to be very effectual, soap plaster, with the addition of a little tar—a drachm of pitch to three or four ounces of the soap-plaster, will give it sufficient of the adhesive quality, and this will irritate the skin much less than either diaculum, or the common adhesive plaster. A plaster of this kind is cut into strips of about an inch and a half in breadth, and long enough to encircle the limb, and leave three or four inches over. These strips should be applied to that part of the limb where the ulcer is situated, and to two or three inches above and below the sore. You commence below the sore, crossing it over the wound, and carrying it steadily and regularly round the leg, giving it such a degree of tightness as the patient can *bear;* it not being your object to apply the strips as tightly as *possible.* Then each successive strip covers about the third of the one that has been applied; and thus you put on strip after strip, till you have applied a sufficient number. You then employ the roller which I have mentioned; and this is the mode of treatment which was found very beneficial by Mr. Baynton, and which has subsequently been generally adopted. He mentions that the application of the strips of plaster and bandages, sometimes produces a slight degree of pain and heat in the limb. Under such circumstances he recommends that the limb should be laid up for a little time, and that a wetted rag shall be put over it, so as to moisten the bandage, and produce cold.

In conjunction with these you may, if you think fit, apply other local means to the sore. There are certain applications, in the form of ointments, which are capable of affording relief. I believe you will find, in general, that the steady and effectual application of bandages will do; but you may apply with these the red precipitate ointment, or the saturnine ointment. Heretofore surgeons made great use of the digestive ointment, as it was called, such as the basilican ointment, yellow and black; the nitrate of silver, or the sulphate of copper; or the sulphate of zinc, or the oxmuriate of mercury, may be applied in solution. It is not necessary to confine the patient to bed when he is treated in this way; and, indeed, it is a peculiar advantage in this treatment, that the patient need not be confined to bed, but may use the limb and follow his occupation. It is sufficient to dress a sore in this way every two or three days, for although those sores, when left to themselves, secrete a thin, unhealthy matter, yet when they are treated as I have mentioned, the quantity of the discharge is very much diminished, and it becomes very much more healthy, so that there is not a necessity for very numerous dressings. I believe these indolent ulcers are what some writers have called fungous ulcers, the granulations being apt to rise up into very large masses above the surface of the surrounding skin.

You will sometimes read of callous ulcers, and in them you find a sore, the margins of which are elevated and indurated, and in which the elevated part becomes covered by a hardened cuticle, which is rendered white and sodden by the application of moisture; the surface presents an excavation, which, instead of exhibiting a large flabby sore, has the appearance of a sore from which there is but little discharge, a kind of sore in which there appears to be no disposition to the performance of the restorative process. Local stimuli and pressure are the means to be employed under such circumstances.

A varicose state of the veins of the lower extremities often tends to chronic inflammation of some portion of the skin, particularly of the leg; and the skin, when once inflamed, usually passes into the state of ulceration; and thus you have a sore formed which depends on the varicose condition of the limb, and which has been called a varicose ulcer; not that there is any thing particularly varicose in the ulcer itself, but it is an ulcer in the skin consequent on a chronic inflammation, depending on the morbid state of the veins of the limb. In the first place, it is expedient to put a stop to the inflammation of the integuments in this instance, and for this purpose you may apply leeches to the surface, and a bread-and-water poultice. When you propose leeches, patients are often very much alarmed, and say, Will not the application of the leeches bring the surface into a sore? They are afraid that it will cause the skin to go into a state of ulceration. Now this is a mistaken notion; the local abstraction of blood has a great effect in removing inflammation of the skin, and if you do this, you accomplish a great deal towards restoring the ulcerated leg to a healthy condition. You take away the painful condition of the sore, and you then find it will heal up quickly. Often, simple dressing and pressure will be sufficient for the rest of your treatment.

An important class of sores is what may be called inflamed ulcers. Inflammation is the source, or the cause, of ulcerative absorption generally, as I have already explained to you. The continuation of ulceration shows that inflammation is extending, and the superveution of inflammation in an ulcer under a healing process, puts a stop to the healing process, and occasions the ulcer again to extend.

Inflammation may exist in various degrees in ulcers producing different kinds of unhealthy appearances, and which are denoted by various terms. We hear people speak of painful sores;. of irritable sores. These, in fact, are only other words for sores that are inflamed. Ill-conditioned sores are principally those in which the discharge is of an unhealthy kind, that unhealthy discharge arising chiefly from the degree of inflammation; inflamed sores, sloughing sores, these are only a variety of degrees of that state which generally may be called inflammation in an ulcer.

When a high degree of inflammation exists in an ulcer, the margin is red and very painful; frequently it is of a fiery red. The limb is generally red, swollen, and hot. I speak of a case in which there is a considerable sore, and that seriously inflamed. The granulations, if there are any, quickly disappear; they are absorbed; and instead of a healthy granulating surface, you have an irregular excavation formed in the bottom of the ulcer. You have a foul, tawny, livid, and sometimes bloody surface. There are sometimes unhealthy appearances in various parts of the limbs, and streaks of blood appear at different points in the sore. You will not expect that a sore of this kind will secrete good pus; in fact, nothing like pus appears in the discharge that issues from it. Instead of pus, there is produced a considerable quantity of thin, fœtid, nearly watery fluid; or a kind of thin matter, sometimes of a red colour from an admixture of blood; or sometimes there is a thin or viscid and glutinous matter appearing over it, of various colours. There are different kinds of discharge from inflamed ulcers, technically called ichor, sanies, and sordes; ichor being a thin, nearly colourless, fluid, something like serum; sanies being thin, and tinged with blood more or less; and sordes being the thicker glutinous discharge.

Now in sores thus circumstanced, it will frequently happen that a portion of the surface will slough; and if a sloughing commences, of course the sore extends, with great rapidity, in depth, as well as along the surface. It may happen that some vessel may be laid open by the sloughing, and that bleeding will consequently take place by this extension of the sore; and in fact such an occurrence is not unfavourable under such circumstances, for the loss of blood from the part affords relief, by unloading the vessels, and taking away an unnatural repletion. Sometimes, instead of this process, it appears as if the granulations were converted into a kind of greenish or livid substance, from which a thin offensive discharge issues, the circumference of the wound being inflamed. Very great pain is experienced in the part while the changes I have just described are going on; and feverishness, to a greater or less extent, affects the system generally. If the causes of this state of the sore are neglected, or if there be no proper attention paid to it, such ulcers lead to a considerable destruction of the part in which the sore is situated, particularly in the lower extremities. To the causes which we have mentioned by which the inflammation is maintained, we must add, considerable exertion of the part in which the sore is situated, especially if in the lower extremity: and particularly intemperance and indulgence in fermented liquors.

The first object under such circumstances must of course be, to put a stop to inflammation, and this requires the general employment of the means I have already mentioned under the term antiphlogistic. The local or general loss of blood; purging and a reduced diet; rest of the affected part of course. Local applications to such a sore must be of a soothing character: tepid fomentations; warm poultices. I should mention by the way, that when the pain is very considerable, and when the depletion that may be necessary has not removed that pain, it is often expedient to give a pretty good dose of opium after the loss of blood. By the continuance and repetition of these means you remove the inflammation, and then the case must be treated according to the principles already mentioned.

It frequently happens that inflammation retards the healing of a sore, although it is not attended with the obvious and striking changes I have now described. Although the state of inflammation does not go so far as to produce those serious effects, a slighter degree of inflammation frequently keeps up ulceration, and prevents the institution of the restorative process, especially in young persons of plethoric habits, and free livers. Again, where extensive ulceration has proceeded in the lower extremity, and where it is going on favourably towards a cure, the favourable progress will frequently be arrested, and the sore will again spread, if we do not pay attention to and regulate the diet of the patient. If we allow him a full diet of animal food, and let him use fermented liquors; if we neglect paying attention to the state of the stomach and bowels, we shall find that under such circumstances the patient will perhaps complain of feeling himself uncomfortable; he will tell you that he feels a headach; yet on looking at the sore superficially, we do not observe much the matter with it. But observing more particularly, we see the granulations perhaps giving way at a few points; that they look yellowish; and if you examine the limb a little more attentively still, perhaps you will find that an unnatural degree of heat exists in it. Under such circumstances you will often find it of great service to take a little blood from the arm, and at the same time reduce the diet.

I may mention, generally, that in the treatment of ulcers, such as require that the patient should be confined to his chamber though not to bed, it may be necessary that he should be on what we call a sick diet. It is totally improper to let him be living on animal food and fermented liquors. If you allow that, it will frustrate all the attempts that are made locally for the cure of the ulcer. A strange notion exists in the minds of medical men, that where they see a sore which is discharging, it is necessary to give nutritious diet, and allow wine and so forth, to support the system under that discharge, when in fact the evil probably proceeds from an already over-full state of the constitution. This is a most injudicious way of treating such cases. On the contrary, you will very frequently find it necessary to take more blood, and to reduce the diet still further, in the progress of affections of this kind.

I should mention also to you, that when large ulcers are healing very rapidly, it is necessary to pay great attention to the same points, in order to prevent the occurrence of other serious mischief. When an active disease of this kind, in any part of the body, is put a stop to, unless great attention is paid to all the points I have mentioned, there is much reason to apprehend that some other parts of the frame will become affected; and I have known many instances, under such circumstances, where persons have been allowed a full diet, that the healing of the ulcer has been speedily followed by an attack of palsy, or some serious disease either in the chest or abdomen.

In the highest degree of that state of disturbance in a part, which constitutes inflammation of an ulcer, I have mentioned to you, that some parts of the ulcer will occasionally slough; you will have what is called a sloughing ulcer. If the antiphlogistic treatment does not put a stop to this sloughing—if the part that has perished does not separate, or if there should be any thing like a disposition to extension, you will often find advantage from stimuli, such as the balsam of Peru, or the dilute nitric lotion; and these applications are very useful in a case in which there is a kind of sloughing ulceration, which we may call herpetic, that comes on in the legs of old persons who have been free livers. A portion of the skin will slough, separate, very soon skin over afresh, slough again, and skin over again; a succession of these will take place, the parts healing up very rapidly, and when the mortified skin has already been detached, the application of the balsam of Peru, or the dilute nitric acid lotion, or opium taken internally, when the pain is considerable, constitutes the best treatment in those cases of combined ulceration and mortification.

The condition of ulcers which we call phagedenic, is most commonly seen as a form of syphilitic disease, but it is by no means confined to syphilitic disease. Phagedenic ulceration may occur under other circumstances; we see it frequently as the result of considerable inflammation; it occurs in the generative organs, particularly of the male, where clap or sores may have existed for some time. Where disease has been neglected, sores of this kind commonly terminate in mortification; part of the prepuce, or glans, mortifies, and the sore spreading, exhibits the particular case which we call phagedenic. Now, the word phagedena, which is derived from the Greek, means eating, and, in fact, the sore to which the word is applied exhibits that kind of surface which is very well described by it; it has the appearance of a regular eating away of the part without any attempt at granulation. There is an irregular eaten surface, generally of a yellowish, livid, or whitish appearance, with a little matter adhering to it, or there may sometimes be streaks of blood upon it. The margin of the surrounding skin is red and painful, and the process of destruction in phagedenic ulceration is attended, generally, with considerable pain in the part.

It is, of course, the first object in this case, to put a stop to the inflammation in the surrounding part; but although you adopt means for doing this, you often find that this ulcerative destruction continues, that the parts are destroyed very rapidly by it, and, in fact, you find it necessary to resort to other measures, besides those, for combating the inflammation. After you have adopted those preliminary measures, and carried them as far as you think fit, the most effective mode of treatment then, consists in the local and general employment of opium, and that in a very free way. The severe pain which accompanies those cases may originally have indicated the external and internal employment of opium, which very soon puts a stop to that symptom. The internal application puts a stop to the general symptoms; and the local application has a beneficial effect on the phagedena. You give a grain of opium, five grains of the pilula sapones cum opio, for example, every six hours, so as to keep the patient under the influence of it; you may also apply such means as are calculated to prevent costiveness, although very commonly the employment of opium in these doses does not occasion costiveness. You apply to the part the liquor opii sedativus, (made by Battley); you employ it by diluting it to the extent of one-half with distilled water; if necessary, however, you may employ the liquor opii simply on lint, and cover the part with a bread-and-water poultice. By this mode of treatment you will find the most beneficial effect produced in these painful and phagedenic ulcers. I have lately had several cases of this kind under my care, in which the advantage of this treatment has been exemplified. One young man came to the hospital who had the glans penis and prepuce uniformly swelled, and about two-thirds of the glans had mortified; part of the slough had detached, and that part presented the phagedenic character just mentioned. There was a high state of inflammation of the prepuce, and the sore below had the character I have stated. The treatment which I have mentioned was immediately adopted in that case, and in about three days the surface, both of the prepuce and the glans, had as completely a healthy character as I ever saw in ulceration. The healing went on favourably throughout, and the patient was very quickly well, if we except the loss I have mentioned; and as that part had mortified before he came to the hospital, of course we could not help that. At the same time there was another patient in the hospital, who came in with extensive sores on the prepuce, in consequence of moisture having formed between its two layers. It was necessary to lay the prepuce open; and when that was done, there appeared to be an unhealthy sore on the inner side of the prepuce. Here the balsam of Peru first, and subsequently mercurial embrocations were tried; but this stimulating treatment, I think, increased the mischief. The soothing treatment of opium, both internally and externally, was then had recourse to, when the destructive progress of the sore very soon stopped, and it healed quite favourably. It may happen generally, when inflammation in this kind of sore is completely removed, when there is no longer pain, and yet where the healing process does not commence, that you will find it necessary to have recourse to some local stimulus, and I believe a mercurial application is the best. The black wash is one of a mild kind; and the cinnabar fumigation is another of a more active character.

What is called sloughing phagedena, seems to be that unhealthy state of a sore which I have now described, carried to a greater extent—phagedena gangrenosa—a mixture of the phagedenic ulceration, with a sloughing of the sore. Now the instances of this which we see in this hospital, are chiefly in young females who devote themselves to prostitution. We are not in the habit of seeing it in male subjects; in fact, men are not exposed to that particular combination of causes which produces sloughing phagedena in these unfortunate young women. But it happens, I think, chiefly in some of the younger members of that sisterhood, who frequent some of the lowest haunts—who lead the most irregular lives—who are exposed to the cold from want of proper covering, and, indeed, to all the causes that tend to depress the system; and especially those who attempt to struggle against these depressing influences by the use of stimulating spirits. It is in these, particularly, that this destructive sloughing phagedena shows itself. They have gonorrhœa, perhaps, or sores attended with a discharge. Now it so happens, from the configuration of the female organs of generation, that that discharge and moisture are not always evacuated, but are apt to collect about those parts; the parts become irritated and excoriated, and then fall into the state of ulceration I am about to describe to you. The surface of the sore exhibits a reddish or brownish, sometimes yellowish colour, as if from the intermixture of matters; and we find, on examining it, that there is a kind of pulpy mass covering the living parts; so that what you see is not, in fact, what you would probably call the surface of the ulceration, but is a kind of unnatural decomposed state of textures, produced by the action of the sloughing phagedenic character, and closely adhering to the living textures. There is a yellowish appearance—frequently a thick yellowish appearance, as if from a layer of matter, on these sores, and you conceive that you can wipe it off with a probe and lint; but when you come to attempt it, you will find this cannot be done; in fact, the external surface of the sore is covered by a substance which is brownish, reddish, and sometimes actually black, being portions of slough. From these sores there exudes a large quantity of thin, sanious, peculiarly fetid fluid, which will indicate the nature of the affection; so that whenever you have seen one or two cases of it, you will be at no loss afterwards, from the smell, to know the nature of the case. The margin of the sore is very red and painful, and the sore extends with great rapidity, both in its circumference and depth, destroying parts so very rapidly, that one can hardly see how they can be so destroyed. They seem to be made up, if one may use the expression, into the pulpy substance that covers the sore. Now this seems to be a peculiar state of the local affection, for the constitution is hardly affected, even when a very extensive sore of this kind exists. You may have the pulse, perhaps, a little excited by the sufferings and want of rest, but you have the tongue generally very clean, the bowels not disordered—no head-ach.

The first object in an affection of this kind is to destroy that morbid surface which covers the sore; and this can only be accomplished by the employment of an active escharotic; what we invariably use, in this hospital, is the pure nitric acid. You dry all the sore thoroughly, and take care that the application shall not extend beyond the surfaces of the wound. You dry the surfaces of the sore as well as you can with lint, and then, with lint rolled round a probe and dipped in the nitric acid, you completely saturate the sore until you have acted on it chemically, and destroyed its surface; then it is reduced into a kind of escar or slough. It is a great object in conducting a case of this kind to a cure, to prevent the recurrence of the cause that produced the affection originally; that is, not to allow any moisture to collect on the surrounding surfaces. Whatever discharge collects, have it absorbed by putting dry lint upon it. Frequently you need resort to no other application than that of dry lint, so as to soak up the discharge, and prevent it from collecting upon, and irritating, or excoriating, the skin. You will find that the slough, when it separates, will leave a peculiarly clean and healthy sore, and that under the employment simply of dry lint it will heal. You will want nothing but one application of the escharotic. I have seen very many of these cases, in which the sore has been as large perhaps as the palm of my hand; and just by one application of this kind it has been cured. The pain, from the application of the acid, is generally very considerable, and you may think it necessary to give the patient twenty or thirty drops of the tincture of opium immediately after the application; the pain will not return. When you have once put a stop to this process, the patient may be said to be well. Sleep returns, no constitutional disturbance exists, and the patient recovers very speedily.

I have mentioned to you that this sort of ulcer occurs generally in women of the town, under the particular circumstances I have stated; but it is by no means confined to cases which might originally be supposed to have been venereal. I remember a very particular case of this nature, under the care of my colleague, Dr. Latham. I was requested to see it, on account of the sloughing phagedena. It was the case of a young woman who had had small-pox very severely; and towards the close of the attack, which had rendered her very weak, came on diarrhœa. There was also a considerable discharge from the vagina, and considerable excoriation about the nates; thus the surface of the nates became highly inflamed. In the end, a large excoriation of the character of phagedenic ulceration, formed in each buttock; the patient was almost reduced to death's door. Dr. Latham asked me to see her, not with a view of doing her any good, for she seemed to be so reduced, that, in his opinion, nothing could be done for her. I thought, also, when I saw the case, very badly of it. There were these two large sores on the buttocks, and a copious discharge, but they were treated by the nitric acid as I have stated. She had port-wine and quinine allowed her very liberally, and she did perfectly well. This was a case in which the cause was quite of a common kind, and in which you could not ascribe the occurrence, even remotely, to syphilitic disease.

As far as I can understand, hospital gangrene is essentially the same as the sloughing phagedena I have described. This is the affection generally called, by the French, *pourriture d' hospital*. Hospital sores, putrid or malignant ulcers, these are terms made use of by those who have observed the disease in the military and naval services. They imply an unhealthy condition consequent on wounds, whether from operations or not, occurring in certain situations, such as hospitals, prisons, ships, and so forth, where individuals are crowded together in considerable numbers, particularly under circumstances of high temperature, and where, consequently, the apartments cannot be well ventilated. It appears to be, therefore, an unhealthy state of ulceration induced by the local influence of a vitiated atmosphere upon the sore. We find that the crowding together of individuals, in this way, has a most powerful effect in producing it, without our being able to account for the mode in which it does produce it. Now, in an hospital in this town, where there was a ward capable of containing twenty patients, it would sometimes happen, from the hospital being crowded, that a few more than twenty would be put into this ward, this was done repeatedly; and it was observed that, if ever the number of patients was increased to twenty-four or twenty-five, typhus fever would break out in the ward. The extra crowding together of the patients produced that particular noxious affection which I have mentioned. It happened to me, not long ago, to have a young woman under my care, who had sloughing phagedena—a very bad case—in this hospital. The application of the nitric acid had the usual beneficial effect, and the case was going on very favourably. She was placed in one of what we call the double wards. It was necessary that one of the wards should be white-washed and cleansed; and consequently, although the patients were pretty numerous in the ward in which she was, a certain additional number was put into it, so that, in the ward which should have contained only fourteen, there were, perhaps, eighteen or nineteen. In two or three days, this young woman, who was going on well, experienced a relapse; the state of sloughing again occurred, so that it was necessary to remove her from that situation.

This condition of sore, then, called hospital gangrene, is to be regarded as the effect of a local influence, as it appears to me to be produced by external local causes, and not in any way ascribable to the condition of any organ or organs of the system. The part in which this particular condition takes place, becomes painful; then it becomes inflamed, and then it passes pretty much into the state I have mentioned. The granulations cease. A pus—a yellowish viscid matter, rises above the level of the surrounding part, forming a covering to the sore; and under this external covering the ulcerative process extends very quickly, and destroys the part in which it is seated with great rapidity. Although the patient's health has not been previously disturbed, of course the occurrence of so serious a local mischief disturbs the health at last. The digestive organs suffer sympathetically. The patient, in the first place, has these organs disturbed, and in the progress of the affection his strength generally suffers.

If there is any thing of a contagious nature in this affection, it is of course very important in treating it, that those who are infected should be separated and removed from the rest of the patients, in order to prevent the propagation of the affection to others. Perhaps it is a point not yet clearly made out, whether the phagedenic sore and the sloughing phagedena are capable of influencing others by propagation, or whether the circumstance of their arising in several individuals at the same time, occurs from those persons being exposed to the same cause. We have not an opportunity of seeing much of this kind in a hospital like this, for the wards being large, very airy, and not crowded, the circumstances which occasion the affection do not exist here; but in some cases, where we have had persons with large phagedenic affections admitted into the wards, we have seen other patients, with common ulcers, who have lain near or contiguous to these individuals, have their sores go into an unhealthy state. This has happened in so many instances under my own observation, in my own wards, that I cannot help thinking there is some contagious influence exerted; that there is some contagious property in this sloughing phagedena capable of affecting others. At all events it is expedient, when this complaint occurs, to disperse patients who are congregated together, and separate those who are affected from those who are not.

The treatment is just the same, in other respects, as that of sloughing phagedena. You have to destroy the morbid surface by some adequately powerful escharotic. The nitric or muriatic acid. Pure potash or the lunar caustic is not powerful enough. Strong vinegar has been recommended, but that is not sufficient. Caustic or potash will hardly act sufficiently through the peculiarly hard viscid mass which covers the sore. The nitric or muriatic acid, therefore, is the substance to be relied on. Professor Delpech, of Montpelier, who had an opportunity of seeing a great many cases of this kind towards the close of the last war, when hostilities were carrying on in the south of France, states that he had received one hundred and fifty soldiers with this affection, who had been wounded at the siege of Pampeluna, I think it was, and that he healed them all by the actual cautery. There is no doubt but that would be sufficient to accomplish the purpose. It does not matter what the precise process made use of is, the object being to adopt means sufficiently powerful to destroy that morbid growth on the surface; and thus to allow the formation of healthy granulating surface beneath it; and this, combined with the removal of the patient from those external influences which seem to have the power of producing the disease, may be relied upon as sufficiently effectual in curing it, and preventing its recurrence.

LECTURE XVI.

Mechanical Injuries, Wounds, &c.

HAVING concluded the observations that I had to offer to you respecting inflammation, I come to another important division of Surgery, viz. the

Nature and Treatment of Injuries,

which, indeed, may be regarded as a continuation of the former subject, for injuries produce inflammation, and our principal object in the treatment of them, is to arrest or to lessen inflammation.

I have, first, to speak to you of *wounds;* and the most simple form of that kind of injury consists of *incised* wounds or *cuts,* under which head we include the great majority of surgical operations, so that the observations I have to make to you respecting the nature of those injuries and their management, are equally applicable to the state of surgical operations; the treatment of the latter falls under the general principles which I shall now have to explain to you.

Under the head, then, of incised wounds or cuts, we embrace all divisions of any part of the body by means of any cutting instrument. Common experience has shown, that if a recent wound, inflicted in this way, has its sides brought into contact, those sides will unite, and thus the wound will heal, without any discharge taking place. If an ordinary person, who had cut his finger, and who had just bound something round the part, and cured it in that way, were to be told that he had cured his wound *per primam intentionem,* he, probably, would be very much astonished to find that he had acted so cleverly. That, however, is the name given to a cure of this kind. When the two sides of a wound are thus brought together and united, Galen speaks of it by the term *primam intentionem.* This is an union known then from the greatest antiquity, though the mode by which it is accomplished has only been clearly explained in modern times. This mode of healing is now very commonly called *union by adhesion*—union by the first intention, or union by adhesion, are synonimous expressions—they are terms perfectly equivalent. When a wound is united in this way, it is found that the substance called *coagulable lymph* is thrown out on the surface of the wound, or, rather, it is effused in the interval between the approximated sides of the wound, and thus it agglutinates, or unites them, to each other. Then vessels form in the lymph which is thus effused and organises it; so that a firm union is established between the two sides. This is the nature of the process; the effusion of coagulable lymph there, the formation of vessels in that *nidus*. Thus is accomplished organic union between parts that have been recently divided. Now you will understand this union is not accomplished by the effusion of blood; and, in this respect it is necessary for me to point out to you a mistake of Mr. Hunter, who speaks of union by the first intention, as if it took place by the effusion of blood, and the subsequent organisation of that blood. It is true, when blood is effused in a wound, that it will mechanically agglutinate, and hold together the sides of the wound, so that, for a time, it forms a medium for holding the sides together. But the blood effused does not become organised, nor have we, hitherto, any evidence whatever for believing that blood effused does become organised in the way Mr. Hunter has represented. In fact, in reference to this particular subject of the union of wounds by adhesion, the presence of blood is to be regarded rather in the light of an extraneous substance; and it is our object, before we bring the edges of the wound together, to cleanse it from all *coagula;* the presence of *coagula* will prevent the healing of the wound—will render it incomplete. It happens, occasionally, that blood is effused into some of the circumscribed cavities of the body; that it is effused in the sac of aneurisms; that it is effused in bruises of internal parts—but we do not find that that blood becomes organised; on the contrary, in many cases it acts as an irritant, and excites inflammation and suppuration; that is, those processes which are necessary for getting rid of extraneous substances. The coagulable lymph is effused from the capillaries of the wound. It is to be regarded as a secretion. It is to be regarded in the same light as the effusion of coagulable lymph, by the capillaries of a part under inflammation. This effusion of lymph does not take place from the vessels that are divided in the wound. So far as the mere effusion of lymph goes, the process does not seem to be essentially distinct from several others that I have already had occasion to describe to you. In fact, we may say, in reference to the deposition of this particular substance, that the process is essentially the same under *five* circumstances which I have already mentioned. In the first place, in the effusion of coagulable lymph, for the purpose of uniting wounds by adhesion; secondly, as the commencement of that process by which a breach is to be repaired, when union, by the first intention, has not taken place, when granulation and cicatrisation are to repair the wound which has been called union by the second intention, and which I have already had occasion to describe; thirdly, in the interstitial effusion into a part under inflammation, which produces thickening and induration; fourthly, in that condensation of parts which constitutes the sac, cyst, or sides of an abscess; and, fifthly, in the effusion which occurs on the surface of a serous membrane under inflammation. In all these five cases, there seems to be no essential distinction, in respect to the nature of the substance that is poured out by the vessels; and, in all of them, it is described under the same term of coagulable lymph. The substance, which is poured out under all these circumstances, agrees in this; that after it has been effused, it admits of receiving vessels and becoming organised; and, in that respect, there is a strongly-marked difference between the effused lymph and coagulated blood, in which we see no such penetration of the substance by vessels, and its ultimate complete organisation.

The process in the various cases that I have now mentioned to you, has been named by Mr. Hunter adhesive inflammation; and he has regarded the process as essentially the same under these various circumstances. An objection has been taken to the employment of the term inflammation, in reference to that process by which a recent wound is united, for, in fact, under favourable circumstances, we find the union will take place without the occurrence of any great vascular disturbance of the part. Often you will not be able to notice any swelling, redness, heat, or pain; not any of those circumstances which are considered necessary to establish the presence of inflammation. In fact, if those circumstances occur, that is, if inflammation takes place in the part recognisable by the circumstances which we ordinarily observe as characterising it, the union by adhesion is disturbed or does not occur. The occurrence, therefore, of inflammation, in its obvious and distinctly recognizable character, interferes with and prevents the accomplishment of adhesion. When you hear the term adhesive inflammation employed, you might suppose that there was something peculiar in the inflammation—that there is some peculiar kind of inflammation that is necessary to accomplish the effusion of coagulable lymph. We are not aware, however, that there is any thing peculiar in the nature of the increased action of the capillaries, which ends in this effusion of coagulable lymph. The effusion of this fluid seems rather to be the result of inflammation when it arrives at a particular pitch or degree, than of any particular character in the inflammation itself. The union by adhesion is sometimes accomplished within a very short period of time. In some experiments made by Dr. John

Thomson, he found that a layer of coagulated lymph was deposited on the side of a wound within four hours from the time of its formation. I have already had occasion to mention to you, that lymph has been effused and vessels have been injected into it, on an inflamed intestine, within four-and-twenty hours from the time of the occurrence of the inflammation. We may say, therefore, that organic union of divided parts may take place in twenty hours; at all events, if we allow eight-and-forty hours for the occurrence, we may safely assert, that parts can be united by organic union within that time.

It appears, that all the soft parts of the body are susceptible of union by adhesion; thus, in the case of a wound that extends through the various textures, such as the skin, the cellular membrane, and the muscles, these can be united by the process of adhesion. With respect to the harder parts, they do not seem susceptible of this process. Bones, for example, do not unite by adhesion. I fancy that fibrous textures of the body do not unite by adhesion: at all events, there is one instance of this in which we have the clearest evidence to show, that a fibrous texture does not unite. I allude to the sclerotic coat of the eye, where we make a small puncture in the operation for cataract. You see that that opening remains the same as when you made it, as long as the patient lives: no union ever takes place. Whether tendons or nerves unite by adhesion, are points which, perhaps, hitherto have not been completely settled.

The effusion of coagulable lymph in the first instance, agglutinates the sides of the wound, and thus forms a kind of mechanical union of the textures that have been divided. When this union has been organized, we find, after a certain space of time has elapsed, that the substance thus deposited is converted into a similar texture to those it unites; that it partakes more or less of the nature of muscle, for example, if muscle has been divided; of skin and of cellular membrane, if these have been divided; yet it does not in all respects assume the original character of those tissues. I have already had occasion to observe to you, that the uniting substance is a something that will enable the part to perform its functions, although you are able, by external observation, to distinguish between it and the original component parts of the texture. But in the case of the skin, muscle, and so forth, it is a something that will restore to the parts that were divided, the ability of performing their original operations.

The union by adhesion will take place, not only when simple division has occurred, but also when the parts have been extensively denuded, and, in some cases, almost separated from the body. Thus, if you have a large piece of the scalp torn up and connected to the remaining sound part, only by a very small portion of the skin; if you clean the surfaces, and lay it down again in its former situation, it will unite. If a finger be nearly cut off, and remain only attached to the hand by a small portion of skin, you may make it re-unite. I remember the case of a person who was on a coach when it was going under a gate-way, he lowered his head, but not quite enough, and the edge of the beam nearly scraped off the entire external ear. The meatus externus was separated, and the ear, in short, was merely held to the head by a very little portion of skin. It appeared, that it would be the shortest way in treating it, to nip it off with a pair of scissors, and, indeed, there would not have been much to cut through. However, as a kind of experiment, the parts were laid down in their original situation, kept there by a bandage, and they united very well.

This process of union has been more decidedly shown by operations which have been undertaken for the restoration of lost parts, and also by experiments on animals, for the purpose of attempting to imitate the process of grafting, as in the case of vegetables. It is a curious circumstance, that as long ago as the year 1155, a surgical practice existed at Bologna in Italy of restoring noses. There were one or two families in which the practice of this operation seemed to be transmitted from one to the other, and those families were famous for its performance. However this operation has been best known to the experimental world as that of Talliacotius, a professor at Bologna, who published a work in which he describes, at full length, the process he had adopted for restoring lost lips, noses, and ears. The cures that were performed, at this time, by Talliacotius, were seen by his contemporaries in surgery; and there is this kind of further proof of what he did, that his contemporaries erected a statue in Bologna to his memory, in which he is represented as holding a nose in his hand. Perhaps, however, he is better known in this country through the notice that has been taken of his proceedings by the celebrated satirical poet, Butler, who says:

> "So learned Talliacotius, from
> The brawny part of porter's bum,
> Cut supplemental noses, which
> Would last as long as parent breech;
> But when the date of Nock was out,
> Off dropped the sympathetic snout."

The truth is, Talliacotius did not cut noses from the breech, nor out of any part of another individual, so that the noses did not sympathize with the dead as Butler represented. The plan which Talliacotius adopted was this: he pared the cicatrix of the lost nose, so as to reduce the edges to the state of a new wound; he then raised a portion of the integument, calculated to restore the part, from the arm or fore-arm; raised the arm or fore-arm up to the nose and joined the parts. He sewed on the piece of skin, which he had not detached, but only raised from the arm, and kept the arm bound up in this situation as long as was necessary for maintaining the circulation in the supplemental nose, and the adhering of the skin to the nose. Then the portion remaining adherent to the nose was separated from the arm, and the portion of skin that had originally belonged to the arm remained and formed the new nose. He in this way restored noses, and he in like manner restored lips and ears, according to his own account.

Although ridicule has been cast upon the Talliacotian art, as it has been called, there seems no reason whatever for doubting the fact, that such things were done; indeed from what we see we can have no reasonable ground for doubting that a portion of integument might thus be raised from the arm or fore-arm, that it might be applied, in the way described, to the cicatrix of a lost nose, become adherent there, and fill up that very unsightly chasm which the loss of this member produces. We cannot, however, believe the whole that Talliacotius has said, for I think he says, that these new noses smelt more acutely than the ordinary ones, and that they sometimes became so elongated as to require removal.

Another mode of restoring the nose has been imported into this country from India, where it was not an uncommon practice to mutilate captives by cutting off their noses and ears; and this, according to their religion, is, a very serious affair. In this mode of operation the integument is raised from the forehead; it is of a triangular shape; it is reversed, the basis being turned upwards; it is detached every where but at the apex of the triangle; the cicatrix of the lost nose is pared, as in the other instance; then the triangular piece is turned round, that is, the apex by which it still remains adherent to the forehead is twisted, and the edges of the integument thus brought down are fixed by sutures to the remains of the old nose. This is a mode which has been recently practised. A book has been published by Mr. Carpue upon it, and some new noses have been made at this hospital in this way—one or two; indeed to me the process is a very feasible one. These operations show you the extent of the chance of union that exists between the edges of recent wounds; they show that this process is not only found to agglutinate—to unite the edges of a cut in every part, but that it will also form an union between two recent surfaces of a wound, in which one is extraneous to the part in which the wound has been inflicted.

In the memoirs of the French Royal Academy of Science, in 1786, there is a paper by Duhammel, on the engrafting of the spurs of cocks into their combs. He mentions, that it has been a practice to make a hole in the comb of a cock, to take his spur off, and to put it into that hole; and he says, that in such a case the spur would not only inosculate, but grow to a considerable size; and he mentions having seen them grow to the extent of four inches under such circumstances. Mr. Hunter repeated those experiments, and certainly found the same circumstance to take place. He found that the spur of the cock would grow when inserted into the comb, and, in fact, that it would get to a larger size than if left in its natural situation. He found that the spur of a hen might be engrafted into the leg of a cock, and that it would grow there; also, that the spur of a cock might be engrafted into the leg of a hen, but that it would not there grow so rapidly or so large. He mentions another experiment, that of inserting a tooth, recently drawn, into the comb of a cock, and that it would become adherent; and he mentions this as an instance of vascular adhesion, although it might be doubted whether the adhesion of a tooth, in the comb of a cock, could be considered as resulting from inosculation of vessels; for I remember seeing a tooth very firmly inserted into the comb of a cock when the tooth was a dead tooth, and which had remained a long time in a drawer before it was inserted into the comb at all; so that it seems a living part has the power of grasping such a substance as that, and holding it firmly. Mr. Hunter, however, performed the further experiment of taking out the testicle of a cock, making an opening in the abdomen of a hen and inserting it there. Under these circumstances he found that the testicle became adherent to the serous membrane of the abdomen of the hen, and grew in that situation.

Treatment.—With respect to the treatment of incised wounds, including also those inflicted in surgical operations, you will immediately perceive that the mode of management must be simple, our object being to promote adhesion and to prevent the occurrence of inflammation.

In order to promote adhesion, we must bring the edges of a wound together, and we must retain them in contact. This is accomplished either by stripes of adhesive plaster or by sutures, or by bandages, or by attention to the position of the limb.

Heretofore sutures were generally relied on for accomplishing the union of recent wounds, now we almost exclusively employ adhesive plaster for that purpose. If adhesive plaster be used, you must bring together the edges of the wound, by employing such a number of strips of the plaster as are just sufficient for the purpose. You do not want to employ more than will simply approximate and maintain in contact the edges of the wound, and you must do this gently. It is not necessary that you should cover over the whole surface of the wound; and it is by no means advisable, supposing a wound has taken place with considerable loss of substance, that you should forcibly draw the parts together, for whenever there has been a considerable loss of substance, you will find that the parts will not remain in the situation into which you forcibly bring them, and that you only excite inflammation by thus forcing them. You will recollect that the substances of which adhesive plasters consist are, more or less, of an irritating kind; and, therefore, if those plasters be applied on a surface, even in a healthy state, they will occasion more or less uneasiness, consequently you will only employ just enough to accomplish your purpose. You will recollect, that more or less swelling is likely to take place after the application of these strips, so that if you apply them tightly, they will act more or less as ligatures over the wound, and they thus produce a degree of pressure that aggravates the inflammation. I have seen, sometimes, very serious injury produced, by forcibly dragging together the edges of a wound, where considerable loss of substance had taken place, and by applying the strips of plaster in such a way as to act like ligatures when the parts began to swell. Not long ago, I had occasion to assist in the operation of removing a female's breast. A considerable portion was taken away, very broad strips of plaster were applied, and the parts drawn together as tightly as they could be. In about eight-and-forty hours after the operation, I was sent for, in a great hurry, to see the patient. She had summoned the gentleman who had performed the operation, but he not being in the way, I was sent for, and I went. When I arrived, I found that she had passed a night without the least rest, and that she felt as if she had a great weight pressing upon her chest. On opening the part, I saw that wherever the strips of plaster were not actually in contact, the swelled and red skin rose up between them, in consequence of the degree of pressure which the strips of plaster produced. I took them off, and the skin all around the wound was red and inflamed. The lady then told me that she felt as if a hundred weight had been removed from her chest. In consequence of this, the injury did not go further; but if the strips of plaster had been left on for four-and-twenty hours longer, they would have been found to have produced an attack of erysipelas. It very often happens that, in consequence of these straps being left on too tightly, erysipelas takes place, and then people say—"Dear me, what a strange thing it is, that erysipelas should have come on!"

Having applied the strips of plaster in the way I have mentioned, so as simply and gently to approximate the edges of the wound, you keep the part covered over with a linen cloth that has been dipped in cold water, and squeezed out, so as to prevent the occurrence of inflammation. If the union goes on favourably, you may leave the strips of plaster on for three or four days; and when you take them off, you will probably find the wound, for the most part, united. You may find it united at one part, and not at another; you will then resume the application of the plaster; or you may find the edges red, and not united at all. Under these circumstances, you may apply spermaceti cerate, with a small portion of adhesive plaster, or the wound must be left to be healed by granulations, in the way I have before described.

Sutures are employed either alone, or in conjunction with adhesive plaster. The form of sutures which we use, is what is technically called the interrupted suture; that is, where each stitch is distinct and separate. You make a single stitch, and then tie the silk or thread into a knot. Sutures are convenient in situations where the integuments are loose and folded, as about the scrotum or neck; or where moisture might detach plaster, as about the mouth. When you employ them, you must use small and sharp needles; and you must use small silk or thread ligatures, such as are proper for tying arteries. The object of using the sutures is merely to keep the edges of the wound together, until the natural process of adhesion shall be accomplished. Now I have mentioned to you that a wound will become agglutinated by the deposition of coagulable lymph in four-and-twenty hours, and that organic union will take place in twenty-four hours; certainly in forty-eight hours; therefore you may cut out the sutures either in twelve, or, at all events, in four-and-twenty hours. You need not let them stay in longer. They have accomplished the purpose for which they were employed; and if you let them stay in longer, they become irritants. You put in as many sutures as you find necessary, and you may support the intervals with adhesive plaster; then cover the wound with a damp cloth, as I have mentioned, after you have fixed the adhesive strips.

Now it happened to me not long ago, that I had to remove an enlarged lachrymal gland from the orbit, which projected considerably beyond the upper eye-lid. It was necessary for me to make an incision from the root of the nose up over the orbit; in the whole about six inches long, and to bring this to a T shape by another incision made at right angles with the first. This wound I united merely by sutures; putting in as many small sutures as were necessary to bring the edges together; and I used no other dressing in that case, except a rag dipped in cold water, and kept continually damp. I removed the sutures in twenty-four hours. There was not a particle of discharge ever took place from the wound, the whole united by adhesion, and the gentleman was able to go about his usual avocations at the end of a week from the period of performing the operation. Perhaps heretofore sutures have been more freely employed than was necessary; but I think, in modern times they have been rather too much neglected, and that the practice of using them has been too much disregarded. The objection may have arisen from the injudicious mode in which they have been employed, rather than from the principle of the practice. Large needles and thick ligatures have been used; and an idea existed, that it was necessary to pass those very deeply, so that the whole depth of the wound should be included; and the sutures, when thus passed, were left in for a long time. You cannot wonder that, under such circumstances, they should very often excite considerable irritation, and that, in fact, obvious mischief should arise from their employment in this way. But if you use small needles and small ligatures, and if you cut the sutures out in about twelve or four-and-twenty hours, you avoid all these mischiefs. I should say, that under such circumstances, sutures are very often necessary, that they are generally very advantageous, and that they are not, under any circumstances, injurious, when they are employed with these restrictions.

You should use sutures for the union of recent wounds of the eye-brows or eye-lids, or of the face generally; because there it is important to have the sides of the wounds very accurately adjusted, in order to prevent or to lessen the deformity that may be occasioned by such wounds. I have seen considerable deformity arise from the neglect of those means that were necessary to bring the edges of such wounds very accurately together. I recollect an instance of a gentleman who had a penetrating wound of the upper eye-lid, it had gone through the textures of the lid completely, without injuring the globe; and in consequence of there not having been proper attention paid, the edges of the wound had healed, so as to leave a sort of button-hole in the upper eye-lid. In another case, where the edges were not well brought together, a kind of fissure was left in the lower eye-lid. In the groin and scrotum, you will find sutures by far the most efficient mode of bringing the parts together.

I have mentioned interrupted sutures as being the form of sutures we most use; but there are cases in which the uninterrupted suture may be advisable. I remember an instance where I found it necessary to have recourse to the uninterrupted suture, and where it answered perfectly well. I had occasion to go some way out of town to see a case, and afterwards, when I was dining in a neighbouring house, the medical gentleman who had asked me to see the case, sent for me again in great haste, saying, that a dreadful accident had just happened to a boy who had been bitten by a pig. It was a large boar, which had used his tusks without mercy. He had bitten the boy through the abdomen, and made an opening, into which I could have laid all my fingers. Protruding through this opening was a part of the stomach, a large portion of omentum, and a considerable quantity of the intestines. The boy had just taken a good dinner, and the stomach was full. On pressing it, I found the lumps of food hard within it. With some trouble I succeeded in putting these parts back into the abdomen; but it was very obvious, that if any degree of tension or of swelling of the parts occurred, they would immediately come out again, so that it would be to no purpose whatever to think of uniting the wound by adhesive plaster, I therefore considered the only means to be that of the uninterrupted suture; I accordingly sewed the wound from one end to the other, embracing the muscles and the whole of the texture in the stitches, just as you would sew up the opening you make in an abdomen you open after death. This of course completely prevented further protrusion; and other means suitable to such a case being employed calculated to prevent inflammation, the case did perfectly well, and the boy recovered very rapidly.

I mentioned two other modes of approximating the sides of a wound,—bandage and position; we very seldom trust to bandage alone for uniting wounds, although there might by possibility be circumstances under which it might be used with great advantage, without any other means.

With respect to position, the necessity of attending to it is so very obvious that it is hardly necessary to notice it. If you cut the thigh across, and bend the thigh, the wound will gape, whereas if you extend the thigh, the edges will remain together almost without any visible opening. So with respect to wounds about the throat and in some other parts, you will often find that position will accomplish what you may want. Position should always therefore be attended to.

Whatever means you adopt, you will find it necessary to keep the wound perfectly at rest, and, in fact, to enjoin rest of the body generally, in all cases of serious wounds of any of the important parts. You will place the patient on low diet, and keep the bowels clear by opening medicine; these are means calculated to prevent the occurrence of inflammation.

You will see that most extensive wounds will unite very rapidly, and very favourably, after operations in which large quantities of blood have been lost, so that you need not be alarmed at patients bleeding freely in cases of operations. Those cases do so much better afterwards, that I think it is advisable to let the blood flow freely during the course of the operation. It has been observed many times on the field of battle, that after important engagements, where there have been numbers wounded, and where perhaps two or three days have elapsed before the field of battle has been sufficiently searched so as to discover all those who had been wounded, that there have been instances of persons remaining two, three, or four days, without any attention at all having been paid to them, or their having taken anything, and to the surprise sometimes of those who have witnessed the fact, they have actually done remarkably well; no doubt much better than if they had had a great deal of care taken of them, and been well stuffed.

If there has been hæmorrhage from wounds you will let the bleeding stop before you attempt to unite the edges, and with a soft sponge cleanse the edges from coagula, before you bring the sides together. Large vessels, or even small vessels that bleed freely, must be secured. Sponging the wound with cold water, and free exposure of the surface to the air, will stop the bleeding; and when all bleeding has ceased, you bring the sides of the wound together. After the patient has gone to bed, the circulation recovers. Faintness and exposure to air, may have stopped the bleeding, but when the part is covered up, when the patient becomes warm again, and more particularly if a good deal of covering has been put upon the wound, the patient being pretty warmly covered over with clothes, bleeding will, not very uncommonly, return; secondary bleeding will take place, and this occurs some time from the period of the patient's being put to bed. The blood that is shed will partly escape at the intervals of the strappings; when it remains in the wound, it coagulates, distends the parts, and gives the patient great pain. Now there is so much suffering produced by these secondary bleedings, and so much alarm occasioned by them to the patient and friends, that it is worth your while to take all possible care to prevent their occurrence; and they may also be very inconvenient to the surgeon, as they may occasion him to be sent for at a moment when it may not be possible for him to attend. The secondary hæmorrhage will be most effectually prevented by your adopting proper means to prepare the patient for the operation. You would not think of taking a patient, of full habit of body, eating and drinking up to the very time of performing an important operation, and then submit him to it. You will be sure to have something wrong if you do that. In performing important operations, you must enjoin patients for some time before to abstain from eating animal food, and drinking fermented liquors; you must take care to empty the alimentary canal; and in some instances, especially if the patient be robust, of a full habit, and young, it may be necessary to reduce him further by venesection, before the operation. Then during the performance of the operation, I have already hinted to you, it is best in general to let the blood flow freely from the vessels that have been divided in the course of the operation. Sometimes we see persons extremely anxious to stop the bleeding: they think it necessary to interrupt the operation for the purpose of stopping the bleeding vessels; but I acknowledge to you, that it has always seemed to me that cases do better where you let the blood flow freely, than where you adopt a contrary practice. I have seen many cases in which there have been considerable bleedings; in some where two or three pints of blood have been lost, particularly when females have been operated upon, and I remember no cases to have done better. Let the patient faint. In fact, syncope is the natural remedy for preventing bleeding. If the patient faints, the loss of blood is put an end to, for the bleeding stops. You take up all the vessels that may bleed after the operation is finished; you dress the wound lightly; you let the part be kept cool and open to the air; you apply damp cloths over it to reduce the temperature; you put the patient into a cool and airy apartment; you let him have only light bed-clothes, and you give him nothing but very light diet; such means are best calculated to prevent the occurrence of secondary bleeding. If you find that the bleeding does not so completely stop as you would wish, within a short period after the operation, you may remove the patient to bed without closing the wound. Let it remain open to the air, which is an effectual mode of stopping the bleeding. And you will find that union will take place much more favourably if you let the surface remain thus open till it gets even a little dry. Perhaps there is no case more favourable for union than where we find it so dry as to present what we call a *slight glaze* upon it. You then bring together the edges of the wound, and you can unite them more favourably when the patient is laid in bed, for in fact if you unite the wound when the patient is lying on the operating-table, the removal of, and carrying him to bed, and placing him in the new position, very often alter the bearing of the strips of plaster so, that the union is thus by no means so accurately effected. Whether in the case of a wound, or of a surgical operation, very light and simple diet is expedient, until the cure of the wound is accomplished. It is by no means proper, under such circumstances, that fermented liquors should be at all allowed; and, in general, you will find it much the best that the patient should not take any animal food till the wound is united.

LECTURE XVII.

Secondary Hæmorrhage—Healing of Wounds by the Second Intention—Lacerated and Contused Wounds—Gun-shot Wounds—Amputation—Nervous Symptoms consequent on Injuries.

I SPOKE to you, Gentlemen, in the last Lecture, of the occurrence of bleeding in wounds, and the conduct that is to be pursued when hæmorrhage takes place. I also adverted to the occurrence of hæmorrhage after a wound has been dressed, and at some distance of time from the infliction of the wound. I believe I omitted to mention to you, on that occasion, what should be done when hæmorrhage comes on in this way.

Secondary Hæmorrhage.—It is necessary to open the wound, to remove the coagula of blood, if any such have formed in it, and to secure the vessel if it continues to bleed. The removal of the coagula, however, and the exposure of the surface of the wound, will very commonly, of themselves, be sufficient to stop the bleeding.

In dressing a wound, if there be any bleeding of a slight kind still continuing from it, or if you suspect bleeding will afterwards occur, it is desirable to leave small intervals between the strips of plaster, so as to let the bleeding ooze out, and prevent it from coagulating in the wound. Thus you will often be saved the trouble of opening the wound again, and the patient will be saved the pain which is inseparable from so doing.

Secondary Intention.—I spoke to you in the last lecture of the union of wounds by adhesion, or by what is called union by the first intention. If the efforts you make to procure the union in this way should fail, then the object must be accomplished by the process of granulation and cicatrisation, which I have already described to you, and which constitute the process technically called *healing by the second intention*. The surface of the wound, if the edges have not been brought together (when, for instance, there has been a loss of substance, so that the edges cannot be approximated,) this surface assumes a dirty-whitish or yellowish appearance, having a dry aspect. Within a short time, this surface begins to suppurate; discharge takes place from the wound; granulations soon shoot up from the surface; they cover the wound, fill up the chasm that has been made, and then the part cicatrises, and goes through the process which I have already had occasion to describe to you, in speaking of ulceration.

The changes which the wound undergoes have been noted by the older writers in surgery, and they have given them names which express the different periods of its progress, though they are different from those we employ at the present day. They said that every wound must go through the process of *mundification* or cleaning; of *digestion* or discharge; of *incarnation* or granulation, (that is, the formation of new flesh); and *cicatrisation* or closing. These are the terms employed by the older writers, and they express, very sufficiently, the stages a wound has to pass through, when it is healing by the second intention.

Lacerations and Contusions.—In lacerated and contused wounds, the soft parts of the body are divided by tearing, and not by cutting; and the surface of the wound very commonly is still further injured by being bruised. We find that the inflammation excited by an injury of this kind, corresponds in degree with the extent of the injury that has been inflicted. Thus, when parts of the body are lacerated and bruised, a much higher degree of inflammation is produced than is occasioned by simple incision. The inflammation, under such circumstances, goes beyond the point that is necessary for adhesion, or union by the first intention. Such wounds will not unite by adhesion; the inflammation is too considerable. The union and healing of such injuries take place by granulation or cicatrisation—that is, by the second intention. In fact, the degree of action excited in the part that has suffered this injury is often so considerable, that the surface of the wound perishes or sloughs. It is to no purpose that we bring together, with great accuracy, the sides of a wound of this description, for they will not unite if we do. It is well, however, slightly and gently to approximate them, and then to cover the wound over with a damp cloth, or a soft poultice, awaiting the process of granulation and cicatrisation. If the wound be of considerable extent, the local inflammation, and consequent febrile disturbance, may very likely require a very active antiphlogistic treatment. You may have occasion to take blood generally, or by leeches; and also to adopt those other antiphlogistic means, which, together with rest, are likely to accomplish your object. A patient was some time since brought into this hospital and put under my care, who having got drunk while driving a coal-waggon, fell with one leg just in front of the wheel. The wheel caught the leg exactly at the bend of the knee; it did not go over the limb, but dragged it forward on the ground, without actually going over it. He was brought to the hospital with a wound about five inches in length across the lower part of the knee, just below the patella, and about three inches in transverse measurement. The integuments, the cellular membrane, and nearly the whole of the extensor muscles of the knee, were divided, in consequence of the limb having been dragged by the wheel. The surface of the wound, it being wet dirty weather at the time, had just the appearance of a mass of dark London mud, for the lacerated flesh was thoroughly incorporated with the filth of the ground, over which he had been dragged. There was great reason, in the first instance, to apprehend that the knee-joint was laid open; but it afterwards appeared, that although the capsular membrane was exposed, it was not divided. Now, in this case, the limb was laid straight, and a couple of splints were placed along it to keep it perfectly at rest. It was cleaned, and covered with a soft poultice. In the course of the evening it was found that the patient's pulse had risen; twenty-four ounces of blood were taken from the arm, and he was purged. Next day, sixteen ounces more blood were taken from the arm, he was purged again, and placed on low diet. On the following day, he was again bled from the arm to the extent of sixteen ounces. This treatment completely prevented the occurrence of local inflammation and general febrile disturbance, and no further action took place in the parts than was just sufficient to accomplish the purpose of healing. The surface of the wound cleansed; a superficial slough took place from the whole of it; it then granulated very copiously; and although, at first, a very formidable injury, the healing process went regularly on, occupying about two months; and, in this way, this very formidable injury was healed, without any great local suffering, and without any febrile disturbance of the system.

Bruises.—In the injury which we call a bruise, or contusion, considerable force is applied to the soft parts of the body. The cohesion of those parts is loosened; the structure is considerably affected, without the parts being actually divided, and frequently in conjunction with this effect, there is effusion of blood into the substance of the part; this latter, however, is not absolutely necessary to the production of wounds of this kind. Such, however, is generally the character of an injury which constitues a bruise or contusion. The effect of this injury is to interfere materially with the function which the part affected should execute. Thus, when muscles are bruised, the motions which they have to perform can either not be executed at all, or are executed very imperfectly. If bruises take place about a joint, considerable stiffness of the joint is produced: here the part should be kept perfectly quiet. If there be considerable pain produced, blood should be taken from the part by the application of leeches, and the other local means which are calculated to prevent the occurrence of inflammation should be adopted. The treatment, in fact, must be of the antiphlogistic character, according to the nature of the symptoms produced. When muscles are bruised, it is of considerable importance that the injured part should be kept at rest, that is, that the muscles should not be exerted for a considerable time after the occurrence of the injury, in order that they may recover their power of contraction.

Ecchymosis.—The effusion of blood in consequence of a bruise, is technically called ecchymosis, and it may take place either into the interstices, so as to be diffused throughout the part generally, or it may collect together in one point. In the case of diffused ecchymosis, the blood gradually and mechanically tinges the texture of the part, and produces those colours which are familiarly known by the terms black and blue marks consequent on bruising. Those black and blue marks are not produced immediately; they do not immediately follow the blow, but there seems to be a gradual tinging of the part by the blood, when the effusion has taken place. A portion of the skin becomes of a dark-brownish, or reddish appearance; then come the other colours; and the changes of colour which are thus produced, often extend to a considerable distance from the part which has been immediately injured.

The blood which is thus effused, is removed by the absorbents; and perhaps, there is no application that we can make use of, that will very much accelerate the natural process of absorption. The blood will be removed by the absorbents if no applications at all be employed. Some substances, however, in the Materia Medica, have been considered to possess the power of accelerating this natural process, and they have been called discutients. The muriate of ammonia in the form of solution, has been considered to have this power; and thus it is a common ingredient employed in any application, when the object is to assist the absorption of diffused blood. Stimulating applications, those that contain ammonia, and the various stimulating liniments, are supposed to have the power of assisting in this process.

When the blood is effused into one mass in a limb, for example, and if the limb be kept perfectly quiet, the effusion may, in like manner, be removed by the absorbents; but it happens, not uncommonly, that the effusion of blood in that way excites inflammation in the part into which it is effused; then formation of matter will take place, and, in fact, the symptoms in the part will be very much like those attendant on an abscess. You may make an opening, however, and find, perhaps, that instead of letting out a quantity of matter, you merely evacuate a large coagulum of blood.

Where there is a large quantity of loose cellular membrane in a part, this kind of process is likely to take place: such as in the scrotum in the male, and labium pudendi in the female. Instances occur, sometimes, in the latter case, particularly where enormous swelling will take place from the bursting of a vessel, and the effusion of blood into one mass. When this takes place, when pain and heat come on in the part, you must make an opening and evacuate the effused blood, and apply cold afterwards; the cavity will contract, and the case will do very well.

Punctured wounds.—Punctured wounds are those which are inflicted by instruments that are pointed and narrow in their shape, so that they enter the part readily, and penetrate easily to a considerable depth. In fact, the depth of such wounds is uncertain. You cannot well tell how far a sharp pointed instrument has passed into the substance of the limb or the body. The danger, therefore, of such a wound is by no means according to its exterual appearance. You may have a very small external opening through the integuments, and yet the instrument may have gone very deep into the limb, and injured a part below of considerable importance.

As these wounds do not, in the first instance, put on a formidable appearance, patients continue to use the limb; they go on with their ordinary exertions, and they bring on inflammation of the part. When inflammation is brought on in consequence of a wound of this kind, it effects the deep-seated textures of the limb; hence the limb generally swells and becomes hard, the inflamed parts being confined and bound down by the fascia which covers them. The appearance, then, which the limb exhibits, is often ascribed to inflammation or injury of the fascia. When there is considerable swelling, and the part is rendered very tense and hard, people say, "Oh, the fascia is inflamed." Now the truth is, fascia is one of those textures which are very little liable to inflammation. Inflammation of fascia is very seldom to be found; and inflammatioss occurring in parts after punctures, are not to be ascribed to the fascia, but to their happening in deeper textures of the limb, and to the circumstance of those textures being confined and bound down by the fascia. It is necessary, therefore, in the treatment of a wound of this kind, to adopt those means, in the first place, which are calculated to obviate inflammation of deep-seated parts. Although you may not know the extent to which the puncture has gone, you should treat the case as if it were one in which considerable inflammation is likely to arise, and thus you will prevent its occurrence; for if a case of that kind is neglected, the local inflammation often becomes very considerable.

Gun-shot Wounds.—Gun-shot wounds have very commonly been considered as altogether different from wounds of other kinds, as being very peculiar in their nature. The injury which is inflicted by wounds of this nature, is very considerable. The inflammation which they produce in the part is violent; their consequences altogether are very serious. Hence, when fire-arms were first introduced, the effects of these wounds were found so much more serious than those which were ordinarily occasioned by the weapons which were previously employed, that it was supposed gun-shot wounds were of a poisonous nature. It was suggested that the gunpowder, or the heat of the ball in some measure affected the wound, and thus that some highly deleterious effect was produced in the injured part. Attempts were therefore made to counteract this deleterious influence by such applications as were supposed to be capable of counteracting heat; the application of turpentine, hot oils, and similar hot and stimulating remedies, were resorted to for this purpose.

Writers of modern times, particularly the military surgeons of Europe, have had ample opportunities of observing gun-shot wounds, and of investigating their nature; so that this part of the subject, and the particular rules applicable to it, are now very well understood. The only peculiarities in gun-shot wounds, arise from the nature of the objects by which the wounds are inflicted, and the degree of force with which they strike the textures of the human body. Balls, bullets, fragments of shells, splinters of stone and wood, and various hard substances of these kinds, are the objects by which the wounds are made, and they are driven with great force against the body; they produce lacerated and contused wounds of the most serious kind; that is, they produce injuries which are attended with very serious local inflammation. The degree of violence with which these wounds are inflicted, differs in different instances. If a gun-shot projectile meet the body directly and in full force, it traverses the part if it be small; or if it be larger, and meet a limb, for example, it probably carries it away. If a small substance meet the body directly, with a less degree of force, it will tear and lacerate the part, break and splinter the bone, producing injuries of this kind according to the degree of force with which it was moving. Sometimes balls or bullets strike the body obliquely; they do not come directly against it, but they strike it at various angles, and, in fact, do not enter the body, but, having touched it, glance off again. Under these circumstances, the soft textures that intervene between the skin and the bone may be divided, and effusion of blood may take place; the bone itself may be broken without the skin apparently being injured It often happens in battle, that persons are found dead on the field in whom there is no appearance of a wound to account for death; but if the bodies be accurately examined, some injury of this kind will be found to have taken place; and those injuries have been very commonly ascribed to the " wind of the ball." It has been supposed, that a ball which has not struck the body, but has passed very near to it, produces some kind of influence, and that influence has vaguely been ascribed to the " wind of the cannon ball." I fancy this explanation does not rest on any solid foundation; we have no proof for saying that a cannon ball, by its wind, in passing very near to the body, will commit this injury; in fact, if the limb of a person be cut off by a cannon ball, it is certain that the ball must go very near to the other, yet you do not find that other at all injured. There can be no doubt that death arises from these projectiles striking the body obliquely, and then flying off. We see in cases of accident, that internal parts may be bruised, and bones broken, though the skin is not injured. The mere absence of injury of the skin, is no proof that considerable violence has not been offered to the parts within.

With respect to the symptoms of gun-shot wounds, I may observe, that sometimes the immediate occurrence of the accident is not denoted by any symptoms, that is, the patient is not conscious that the wound has been received, more particularly if the mind was very actively engaged at the time the wound was inflicted, as in the instance of persons in battle. A leg or a thigh may be shot through, and the patient may not be aware of the fact until he discovers it by accident. Very often a serious wound of other parts may be inflicted, of which the patient is ignorant until he finds it out by observing blood to flow from the wound. In other instances, considerable pain is produced, serious pain. Sometimes serious and even fatal hæmorrhage is produced at the moment by a gun-shot wound; indeed you will easily understand that large vessels may be injured by wounds of this kind, and you will not be surprised if copious bleeding take place and the patient perish. But, in the majority of instances, gun-shot wounds do not bleed at all, or only to a trifling extent; when a thigh, for instance, is carried away by a cannon ball, no considerable hæmorrhage takes place.

When an artery is divided by actual tearing, the coats do not give way all at once, each in the same degree. The internal and middle coats do not allow of stretching like the external or cellular coat. The internal and middle coats rupture first; the external or cellular coat is drawn out to a considerable extent; but that also, at last, yields. It is very elastic, it contracts again, corrugates, and forms a kind of natural bandage, or ligature, round the divided internal and middle coats. Thus, if you take an artery out of a part, after a wound of this kind, you will find it covered by a dense cellular structure; and, in this way, it happens that when large arteries are thus broken, being first violently extended, and then torn, they do not bleed, although if a bullet or any other body go directly through them, without extending the coats, very violent hæmorrhage takes place.

Very frequently the occurrence of gun-shot wounds produces a peculiar effect, both in the nervous and the circulating systems. It will produce violent tremors, agitations, alarms, or feelings of anxiety, in the individual. It will disturb the action of the heart, and reduce it very much, producing a feeble and irregular pulse, pains, colds, shiverings, and actual syncope. From the effects produced both in the nervous and circulating systems, a patient will seem on the point of dying from a severe gun-shot wound; and these symptoms will last for a few hours after the infliction of the wound, although, in other instances, as I have already mentioned to you, a patient may be hardly aware that a wound exists. These symptoms arise from a very violent depression of the nervous and circulating systems, and go off in two or three hours after the wound has been received.

In considering the treatment of gun-shot wounds we may observe, that injuries of this kind are very often complicated in consequence of the presence of foreign bodies; that is, the bullet which has produced the wound may not have passed through the body. It may have entered it, and remained there.

Portions of the dress of the individual may be carried in by the bullet at the time the wound takes place. It is desirable, in the first instance, to remove such foreign substances, when it can be accomplished easily. When the bullet, or fragment, is near the external opening of the wound, and it can be removed by inconsiderable incision—if a bullet, for instance, having gone through a limb, be just under the skin at the opposite side of the limb, and you can remove it by merely making a division of the skin, by all means take it out. If there be a large mass of clothing so situated that by a little incision you can remove it, it will be desirable for you to do so, for objects of this nature will become sources of irritation in subsequent stages of the proceedings. When, however, you cannot get rid of them without tedious search, without extensive incisions, you had better leave them alone. It often happens that bullets are driven far into the body, and without being detected after the infliction of the wound, they remain in the situation to which they reached in the first instance, and actually continue there for a number of years, without exciting any irritation in the part. It frequently happens that the direction of a bullet, on entering the body, is diverted; it does not go straight through from one surface to the other; it does not pursue a straight course, but it will be diverted from its regular direction, by striking against a bone, or meeting with a tendon, or the convex surface of a muscle; and, indeed, so much so that the mere external opening of the wound, and the direction the bullet seemed to have taken on first entering the body, do not give you any means of tracing out the part at which it has arrived. In many cases you cannot find out where the bullet is seated, so that you have not the means of tracing it.

For the reasons I have just given you, it is not worth while to make any great search for the foreign body. It is better to leave the thing alone, for you find that no very serious effect is produced by its presence. For the first few days after the infliction of such a wound, you cannot do better than keep the part covered with a cold, wet, cloth. That is the most likely mode to prevent inflammation. If the cold should be unpleasant to the patient, you may apply a poultice. As to the posture of the limb, you should adopt the position best calculated for its quiet. With regard to the state of the patient's body, diet, and all other such circumstances, you should follow the plan which is most likely to prevent the occurrence of inflammation, for that is the great source of danger in such cases.

Under certain circumstances, it will be necessary for you to adopt very active antiphlogistic means. Where a part of great importance is the seat of injury, and where the injury is very considerable, you must have recourse to them. Such, then, are the means that you should employ in gun-shot wounds.

But there are certain proceedings which it is equally expedient for you not to adopt. In the first place, you are by no means to consider it necessary to apply bandages. You should not apply a bandage after a gun-shot wound, unless there is some particular purpose to be answered by it. You may expect inflammation and subsequent swelling as the result of such a wound, and the probability of these renders the application of bandages very objectionable. It was formerly directed that sponges or lint, or what some surgeons have called tents, should be introduced into the wounds, to keep them open, and afford a free discharge in the subsequent progress of the wound. This is not at all necessary. Again; it has been advised to make incisions at the entrance and exit of the bullet, to prevent the occurrence of tension, or in order to prevent confinement of the matter, when the period of its discharge arises. Generally speaking, this may be regarded as unnecessary. If you adopt the means that are best calculated to prevent or allay the inflammation, no tension will take place in the part, and, consequently, those incisions are without any object. If there should be any tension, and considerable inflammation take place—if sloughs, or any matter, should be confined, it will then be time enough to make the incisions necessary for the discharge.

After a few days, the surface of the wound will begin to discharge, and be sloughy. There is so much bruising in gun-shot wounds, that the surface generally perishes, and a slough, more or less thick, usually separates from the whole track of the wound; this process generally commences four or five days after the infliction of the wound. This is a period of danger, in consequence of the risk, in many instances, of secondary hæmorrhage. If the track of the wound slough, and that go very near to vessels of importance, those vessels may be included in the sloughing process; and when a portion of a vessel comes away, you may expect free bleeding to take place. Thus, in injuries where no hæmorrhage has occurred immediately on the infliction of the wound, very serious hæmorrhage will take place at the period I am now mentioning. At such a time the patient should be very carefully watched. In any case in which the track of the wound goes near to a vessel, it is important that you should most carefully attend to it at this time. Have tourniquets at hand, and instruct the attendant to pay particular attention to the patient. The healing of the wound must be accomplished by the process of granulation;

and if no blood-vessel have been materially injured, if no bone have sustained considerable injury, though the wound has taken place in a part of great importance, you will find that, if you have adopted all the measures calculated to prevent inflammation, the injury, apparently very serious at first, will do well; nature will perform the restorative process speedily, and effectually. If a bone have been injured, it will often happen that pieces will continue to come away through the wound for a considerable period. A patient may go on in this way for a long time, without being in any particular danger.

Amputation.—In the case of gun-shot wounds in the extremities, it often becomes a question whether it will be better to attempt to save the limb, or to perform the operation of amputation. In certain cases of this kind, the injury is so extensive, and so violent in degree, that you would have no hesitation in deciding that traumatic gangrene occur, or that so violent a degree of local inflammation, and consequent febrile disturbance, will take place, as must endanger the life of the patient. Or the case may be rather more doubtful; it may appear possible that the limb may be saved, and yet there may be so much doubt about it, that if you make the attempt, the patient may lose his life in consequence; or, after undergoing serious inflammation, suppurations, and protracted formations of matter, he may recover at the end of several weeks, or months, or even sometimes years, with a limb so much impaired in power, that it may be doubtful whether a wooden leg would not be more useful. There can be no hesitation, then, in stating, that there are certain cases of gun-shot wounds, in which the removal of the limb is the best course of proceeding; although, I should observe to you, that this point has been often questioned. Frederic the Great, king of Prussia, had so much occasion for the assistance of soldiers in the course of his government, as he was almost always at war, that he could not bear the sight of individuals who had lost their limbs, because they were no longer capable of serving as soldiers, and he took it into his head that his army surgeon often cut off the limbs of his soldiers when amputation was unnecessary. He accordingly determined to ascertain whether amputation could not generally be dispensed with in his army, and he therefore directed his chief army surgeon, Bilguer, to turn his attention to the point. That surgeon published a tract, the object of which was to prove, that amputation might be entirely dispensed with, or that, at any rate, it was very seldom necessary to have recourse to it. The title of that work was "De Membrorum Amputatione rarissime administranda aut quasi abroganda." The arguments he had recourse to, to show that amputations were not necessary, were very well answered by Mr. Pott, in his treatise on the subject. Indeed, we can have no hesitation in stating, that there are cases in which amputation is necessary.

The question then arises—What are the kind of gun-shot wounds that require removal of the limb, and what is the time at which the operation may be most advantageously performed? The cases for amputation are those in which an important joint is traversed by a bullet. A gun-shot wound of this kind in the knee, is always a case for amputation; and army surgeons consider that, in most instances, a similar injury of the elbow, or of the ancle, is also a fit case for amputation; at all events, it is so of the ancle. With respect to the elbow, the power of restoration is more considerable there, and a stiff joint of the elbow is not of so much consequence as of the ancle. However, most cases of accidents of this kind to the elbow or the ancle joint, are considered by those who have had much experience in this branch of surgery, to be proper cases for amputation. A very extensive laceration of the soft parts of a limb, with a splinter and extensive fracture, or a compound fracture of the thigh by a gun-shot, are, in all instances, fit cases for amputation. In injuries of this kind, of the leg or arm, where the soft parts are extensively lacerated, and the bone is considerably splintered, it will often happen, that the injury to the bone will extend considerably above the part which has been struck by the projectile. Thus, if the tibia be struck in the middle, it may become splintered up to the knee joint. When a large mass of the soft parts of a limb is shot away, more particularly if it include the main artery, and when a limb is carried away entirely by a cannon ball, it may seem that the accident has of itself performed the amputation; the amputation, however, is not done neatly enough, and it is necessary to cut off the limb higher up. Such are the serious cases of gun-shot wounds of the extremities, in which the removal of the limb becomes necessary.

Then with respect to the time of performing the operation. You have the choice between immediate or early amputation, that is, the removal of the limb within ten hours, or, we may say, at the farthest, twenty-four hours from the occurrence of the accident, at a period when inflammation has not arisen in the part, and when febrile disturbance of the system has not taken place—you have the choice between this or waiting until the local inflammation and general febrile disturbance which ensue, shall have subsided; that is, until a very remote period of time from the occurrence of the accident. The choice is between immediate or early, and delayed amputation; between primary and secondary amputation. The question, which of these two periods is the best for the removal of the limb, must, of course, be one of experience. It is not a point to be determined by reasoning, but by observing, *a priori*, what actually takes place in a great number of instances, by comparing the results of a large number of cases in which the limb may be removed immediately after the accident, with the results of a similar number of operations in which it has been deferred, until the local inflammation has subsided, and then seeing under which plan the greater number of lives is saved. Now the result of experience on this point is decisive, and that proves very clearly that early amputation is the best, and, in my own opinion, the result of experience corresponds with the dictates of reason. If, indeed, we were to rely merely on the latter, I think we should arrive at the same conclusion that experience points out. Why do you determine on removing a limb under such circumstances? Because you think that the nature of the accident is such as to endanger the life of the individual. You would not remove the limb, unless you supposed life to be in danger. Life would be in danger by the occurrence of traumatic gangrene, which would carry off the patient very quickly, by the violent local inflammation and serious febrile disturbance of the system consequent upon it. Now if you defer the amputation until a distant period, you give the patient the chance of dying before the time of operating arrives. By operating immediately you save the patient from the risk which these occasion; but, by delay, you expose him to the approach of death; he may not live to the time appointed for the secondary or deferred amputation.

As a reason for delay, it is said, that patients in strong health do not bear operations so well as those that have been previously reduced. This, as a general proposition, may be admitted to be true, but still it is not the proper ground for deciding the question in such cases; the question is, whether out of an equal number of patients on whom amputation has been performed, in consequence of serious gun-shot wounds, immediately after the injury, and another number on whom the operation has been deferred to a remote period,—whether you save the greater number of patients out of the former or out of the latter;—whether the patients will go through the operation of immediate amputation, or whether they will go through it better after they have endured the inflammation, the fever, and the various consequences resulting from the injury? That is the true question. Now, if we observe the results in instances in which a large number of amputations has been performed under both these circumstances, we shall find them decidedly in favour of early amputation. After the battle of

Toulouse, the battle of New Orleans, and some others that occurred towards the close of the last campaign, this comparison was very accurately made. The result of all the amputations performed immediately on the field of battle, or very soon afterwards, was ascertained, as also was the result of all the amputations performed at a remote period; and it was found that the number of deaths in the delayed cases was nearly double those after the early amputations. The result, therefore, was very much in favour of the latter. Still that does not give you the true comparison between the two modes of proceeding. What you want to know is this:—Supposing you have a hundred patients requiring amputation, you take fifty of them and amputate immediately, leaving the other fifty to be amputated upon some weeks afterwards. Will you save the greater number out of the first fifty, or out of the second? Recollect, that out of those in which you delay the operation, there is a certain number that will unquestionably die in the mean time, from the effects of the accident. They do not, in fact, live to allow of the operation being performed. To the number of deaths out of the second fifty, therefore, you must add those who die before the operation is performed, and then the case becomes still more in favour of early amputation. This point has been placed, by the experience of English and French army surgeons, in the course of the last war, in so striking a light, that there can be no further question upon it.

In addition to the ample experience to be thus derived, it would be of little use to mention the more limited experience that has occurred to myself. In fact, we have not, in very many cases in civil practice, the opportunity of performing operations after accidents. I have, however, in the course of a great number of years, performed no inconsiderable number of operations immediately after serious injuries; and I may mention to you, that the same observation applies to cases of compound fracture, as to cases of gun-shot wounds; the result of the immediate operations has been, in general, very satisfactory. But suppose you were to consider the matter without any reference to experience at all; should you expect that a person, whether in high health or not, would bear best, the simple and clean cut of an amputation, or the extensive laceration and contusion, with splintering of bone, and perhaps exposure of a joint, from a serious gun-shot wound? To my mind, there can be no hesitation in saying, that the simple cut of amputation is much the less serious of the two; that the patient is much more likely to go through the operation safely and well, and have his life preserved, than when exposed to the very serious and complicated mischiefs that take place from some of the worst gun-shot wounds without it.

Now, with respect to the place of amputation, it may be observed, that, in general, you save as much of the limb as you can. But you must bear in mind the circumstance I have mentioned to you, the splintering of bone in bad gun-shot wounds, and the extent to which that may affect the bone beyond the part at which the wound has actually been received.

In the treatment of gun-shot wounds of the chest, or abdomen, the principles observed must be very much the same as those which will guide you in the management of wounds of any other kind, occurring in those situations, and, in fact, the practical rules are simply those that are necessary to avert inflammation. You will find it expedient, in injuries of this kind, to employ the most active antiphlogistic means; and under their vigorous employment, recovery will often take place in wounds that appear to be of the most dangerous and desperate kinds. You will find patients recover from wounds where, if you considered merely the track of the ball, it would be supposed that parts of the most serious consequence had been injured. I remember being sent for to a young man who had attempted to destroy himself by discharging a pistol in, what he conceived to be, the situation of his heart. He had pointed the weapon to the left side of his chest, and there discharged it. I was summoned to him very suddenly, but the person who came to me said it would be of no use my going, as the gentleman was undoubtedly dying, and would, very probably, be dead by the time I arrived; still, as he had been desired to find a surgeon, he begged that I would go and see him, dead or alive.

When I arrived I found the young man nearly in the situation the individual who came for me had described. He was in a state of the greatest depression; the pulse was scarcely perceptible; the skin was pallid and cold, and the patient was hardly able to utter a word. I found him, in fact, looking very like a dying man. There was an opening towards the anterior part of the chest, nearly in the middle, though a little towards the left side, not far from the sternum; so that it seemed probable the ball had gone very close to the heart; at all events, if it had not gone through the heart, it appeared that it must have gone through, or pretty near, the stomach, or some part of equal consequence. Upon examining him very carefully, I found the ball just under the skin, close to the spinous processes of the dorsal vertebræ behind, and nearly opposite, the point at which it had entered in front. I divided the skin with a bistoury, and took out the bullet. The gentleman was so low when I saw him, that it was necessary, after putting him to bed, to give him a little wine and water. However, he slowly recovered; the immediate depression arising from the wound went off, and it was soon manifest that no such injury had been inflicted on any organ of importance as was likely to destroy life. All that was done was, as the circulation became more vigorous, to bleed him very freely, to purge him, and to keep him in a state of absolute rest; and that plan was pursued to the utmost extent. The symptoms of active inflammation in the chest which had come on, disappeared on the employment of venesection and the means I have mentioned. He lost altogether an immense quantity of blood, and was reduced by these means apparently to death's door. But he was a young person of good constitution, and it turned out that neither the heart, nor the stomach, nor even the lungs, had received any serious injury. He recovered completely—got quite well.

LECTURE XVIII.

Tetanus—Chemical Injuries—Effects of Heat—Scalds—Burns—Effects of various Acrid and Escharotic Substances: Potash, Ammonia, Lime, Muriatic Acid, Nitrate of Silver.

Local injury, Gentlemen, often immediately produces sympathetic disturbance of the stomach, the heart, or the nervous system. Thus it happens that wounds are accompanied, in many instances, by nausea, a sense of sickness, and even vomiting; with depression of the pulse, and often syncope; coldness, and pains of the surface; with agitation, anxiety, and alarm. Not uncommonly, too, such injuries are attended by rigours: this is an effect which happens on all occasions in which violent injuries are inflicted on the animal economy. Local inflammation is, very commonly, ushered in by chills and shiverings, such as occur during the formation of matter. I do not know that we can explain, very clearly, the mode in which these particular symptoms arise, nor point out, exactly, to which part of the system the occurrence of rigours is to be referred; it would seem, however, that the muscular system is that which is more immediately concerned.

Tetanus.—A serious affection of the muscular and nervous systems, under the name of *tetanus*, is observed as a remote consequence of local injury. The word *tetanus*, which is of Greek extraction, means tension, or contraction; and *tetanus* may be defined to be a state of spasm, or permanent contraction of some part or the whole of the voluntary muscles.

When we say *permanent contraction*, it must be understood to be used with some limit. The state of the voluntary muscles in a patient labouring under tetanus, is, generally, that of spasm, or continued contraction; but there are occasional paroxysms of convulsions; and there are states of occasional relaxation of the muscles, and during sleep they are generally pretty much relaxed. We cannot, therefore, in such cases, say that the voluntary muscles are permanently contracted through the whole period that this affection lasts. The state may be considered permanent, when the intervals of even partial relaxation are rare and distant.

Tetanus may be either partial or general. When the muscles of the jaw alone are affected, the case is called trismus, or, in popular language, locked-jaw; and this latter term, locked-jaw, is used as a common phrase to denote tetanus, without meaning that the affection is confined to the muscles of the jaw. In common language, the word locked-jaw is used as a term equivalent with tetanus, although, strictly speaking, it is only applicable to cases in which the muscles of the jaw are involved. When the muscles of the back-part of the trunk are affected, so as to bend the body backwards, it is called opisthotonos. Opisthotonos is a Greek word, implying a state of tension, with incurvation of the trunk backwards. There is no case that can be designated by that term with strict propriety. There is not any instance in which a tetanic affection is confined simply to the trunk or back part of the body. It happens that the muscles of the back of the trunk are affected, and become tense; and, so far, the trunk may be drawn backwards; and to this extent it may be called opisthotonos. In other cases the body is drawn forwards, when the affection is termed emprosthotonos. There is a state in which the body may be drawn to either side, and that state is called pleurosthotonos. Now, it is common enough to see the case described under the term opisthotonos; that is, the trunk bent backwards; but I cannot say that it ever happened to me to see the body either bent forwards or to the side; therefore, I conceive that those cases called pleurosthotonos and emprosthotonos are rather imaginary than otherwise. Tetanus is either idiopathic, that is, it is produced by internal causes, or seems to arise, in common language, spontaneously; or it is the result of a wound, in which case it is called sympathetic or traumatic. The progress of the affection differs in rapidity in different instances, and hence it is divided into acute and chronic. The truth is, that there are hardly any cases that properly deserve the name of chronic. Tetanus, in some cases, is less acute than in others, but it is never protracted or long continued. There is not the same distinction into acute and chronic in tetanus, as there is in inflammation; all we can say of it is, that some cases are less acute than others.

The consideration of idiopathic tetanus belongs to the physician; I have, therefore, only to speak to you of that form of the affection which occurs in consequence of a wound or injury. Traumatic tetanus, then, is the name applied to that form of the disease which derives its origin from the infliction of wounds; and it is observed to arise, more particularly in consequence of wounds of the extremities, happening very rarely, if at all, in consequence of wounds of the head, neck, or trunk. It is produced, most commonly, in consequence of contused, lacerated, or punctured wounds; and it has been supposed to arise, more especially, from such wounds as are attended by injury, such as division, laceration, or puncture of nerves.

The truth is, that all wounds which take place in the soft parts of the body, are accompanied with more or less injury to some nerves; so that we cannot have a wound of a soft part without it. I am not aware that there is any direct evidence to show that injuries of nerves are more or less likely to produce tetanus than injuries of soft parts, independently of particular injury to nerves. It has been said that tetanus may arise from nerves being included with an artery in a ligature, after an operation. I fancy that this is an imaginary conclusion. It happens, no doubt, very commonly, that nerves are included in ligatures with arteries which are tied; but, at all events, tetanus in these climates, after operations, is a very rare occurrence.

Tetanus will occur in all states or stages of a wound. It may happen when a wound is in an inflamed or sloughing state; it may happen when a wound is going on very favourably towards healing, and when healing is considerably advanced. It is observed by Sir James M'Grigor, in his account of the Surgical History of the English Army in the Campaigns of Spain and Portugal, that tetanus was observed to take place in consequence of all descriptions of wounds, both serious and trivial; both incised, punctured, and lacerated; and that it took place in all their various stages.

It is not an immediate consequence of such injuries; it comes on some days after the occurrence of the wound, and often a considerable number of days after it. Perhaps from five to fifteen days may be stated as the ordinary limit. If the patient have no affection of this kind for the space of about three weeks after the accident, he may be considered safe, free from all danger of tetanus.

Tetanus occurs, in its idiopathic form, more frequently in hot climates than in those which are temperate; it is quite uncommon in the latter, though very frequent in the former. The affection, in the first place, shows itself in the muscles of the jaw, and those that are concerned in deglutition. The patient finds a stiffness in the movement of the jaw; he experiences an uneasiness in swallowing, and he soon finds that he has a difficulty in separating the teeth for the admission of food into the mouth. About the same period, a pain begins to be felt behind the sternum, and this pain extends from the pit of the stomach towards the vertebral column. This pain has generally been ascribed to the tetanic communication of the nervous affection to the diaphragm, although, perhaps, that is rather a doubtful explanation of the phenomenon. The muscles of the back of the neck begin to be affected by the spasm; subsequently those of the back generally; then the muscles of the abdomen, and the abdomen becomes as hard as a board; then the muscles of the limbs, and, lastly, those of the face. When the muscles of the face are affected with tetanic spasm, the features are drawn, independently of the will of the patient, into a peculiar form; very frequently a kind of grin is produced by their action. It is a kind of grin and laughter, but without the will of the patients, so that it is an appearance of laughter, independent of that state of mind which should accompany it, and there is a something very distressing in the effect thus produced.

Now I have mentioned to you, that the state of the muscles affected in tetanus is, generally, that of spasm or permanent contraction. Cullen gives it the name of rigiditas spasmodicum—a spasmodic affection; but, generally, rigidity of the muscles is attended with very severe pain; indeed you can easily imagine this, when you recollect how severe a pain is produced by a slight cramp in the legs. The patient labouring under tetanus has a universal cramp, and the sufferings, therefore, are excessive. The affection of the muscles in any part in which it comes on, does not at first reach to the highest degree of contraction, but the muscles become more and more rigid as the affection proceeds. In the first instance, for example, the jaw is not confined completely; the patient has, perhaps, the power of opening the mouth, but, as the affection proceeds, the muscles become more and more rigid, until the mouth can be opened for the admission of food or medicine, only with great difficulty; and, indeed, it is sometimes necessary to take out one or more teeth for that purpose. The same may be observed with respect to the muscles of the neck and of the spine, and in some cases, when the spasm is carried to its height, the trunk is forcibly extended, and the shoulders are so drawn back, that you can put your hand into a complete hollow under the spine. This is the state that may be called opisthotonos; when the disease has arrived at its highest, you have this state of permanent contraction—spasmodic contraction of the whole of the voluntary muscles. The muscles of the trunk, the muscles of the abdomen, the muscles of the limbs, and the muscles of the face, are in this state of rigid contraction, and the pain to the patient is excessive.

The intellectual functions are not impaired in tetanus. It is stated by Cullen, too, that the natural functions, that is, the secreting, the respiratory, and the digestive, are unimpaired; but this I consider to be a very erroneous representation. He states, also, that the pulse is not at all affected; that the blood exhibits no alteration when it is drawn from a person labouring under tetanus, or that if it be altered at all, it is rather loose in its consistence. He mentions that the appetite is unimpaired, and that the functions of the digestive system are regularly performed. Now you will usually find that the pulse, particularly in a young robust person labouring under tetanus, is full, strong, and accelerated; that it often rises from 100 to 120 and upwards, at the beginning of the affection. You will find that the blood is buffed and cupped, instead of exhibiting the looseness of texture of which Cullen speaks. There is loss of appetite and most obstinate costiveness, circumstances which are quite inconsistent with the idea of the regular performance of digestion. Indeed, in the treatment of this disease, this costiveness is very troublesome, and frequently tends to obviate the effect of medicines given for the relief of some other symptom.

The pathology of tetanus has, hitherto, been rather obscure. The spasm, and the convulsions of the voluntary muscles, naturally lead us to inquire into the state of the spinal chord, from which the nerves supplying those muscles are derived. This has, of late, been particularly examined into; and in cases of tetanus appearances of disease have frequently been described as having been found in the spinal chord; but I cannot say that those appearances are either sufficiently constant or distinct to lead to any satisfactory explanation. In some cases, small thin plates of ossification have been found upon the arachnoid membrane of the spinal chord, but we can hardly suppose that they have been produced in the time within which tetanus has existed. If any particular state of the spinal chord produce this affection, we should then wish to know how the disturbance of that chord is produced: what is the circumstance which occasions the derangement? Here we are at a loss; we are unable to point out, with any degree of clearness, in what the derangement of the spinal chord consists; nor can we show, in any definite manner, as far as our examinations hitherto have gone, any distinct or clear derangement of that part. It has been observed, that a state of costiveness precedes tetanic symptoms, and Mr. Abernethy has made this a particular subject of inquiry; at least he has pointed out this question as one that should be held in view in the pathological consideration of the subject; that is to say, he has made it our business to inquire, what is the condition of the digestive organs of the patient prior to the occurrence of the tetanic symptoms,—between the receipt of the injury and the development of tetanus? Obviously, himself, being of opinion, that the injury, in the first place, produces derangement of the digestive organs; that that deranged condition of the digestive organs disturbs the spinal chord, and, probably the whole system; and, further, perhaps, that this derangement of the spinal chord and system is the affection which constitutes tetanus. This seems a rational and probable conjecture as to the mode in which tetanus is produced. We must, however, observe, that this point of pathology is by no means made out; so that the elucidation of the mode in which tetanus occurs, and the exact situation of its origin, are points which remain for future inquiry.

Prognosis.—The prognosis is always of deep importance; though it is much less important in idiopathic than in sympathetic tetanus; indeed, in many cases, idiopathic tetanus is cured, but it is rare, we may say very rare, that traumatic tetanus is cured, that is, tetanus which arises from the infliction of wounds. It is to little purpose, therefore, to enumerate instances in which idiopathic tetanus has been cured, because we find that the same means which have been used in that description of the disease, do not produce the same benefit in cases of traumatic tetanus. The more acute the character of the affection, the greater the danger of the patient; that is, the more rapidly the symptoms are developed, and *vice versa,* the more gradual, the more chronic the symptoms are, the greater chance is there that the disease may be overcome.

It was observed by Hippocrates, that if the patient survived the fourth day of the disease, there was a much greater chance of his recovery. Dr. Parry states, that if the pulse do not rise above 100, or 110, by the fourth day, there is a tolerably fair chance of cure.

Treatment.—In the treatment of tetanus, the first inquiry that presents itself is, inasmuch as the tetanic symptoms are the consequence of a local cause, that is, of a wound in some part or other, whether the removal of the cause will put a stop to the symptoms? in other words, whether the amputation of any part, for instance, of the finger or thumb, or of an entire limb, when the wound which has produced tetanus is in a limb, will arrest tetanus—put a stop to the complaint. I believe we may say, pretty positively, that it will have no such effect. You have seen already that tetanus may occur when a wound is in a healing state, and when it is making rapid progress to a cure. You cannot suppose, therefore, that the removal of a healing wound would have the effect of putting a stop to tetanus. No doubt the tetanus owes its origin to some condition of the wound that occurred prior to this healing state; but there is no reason, therefore, to suppose, that although the state of the wound, at the time of the development of the disease, was the cause of tetanus, that the removal of the wounded limb would remove the tetanus also. If the cause of tetanus depended principally on the health of the individual prior to the development of the symptoms—if it arose from some peculiar state of the constitution, you could not suppose the removal of a wound would have the effect of stopping it. Yet the removal of the limb, the amputation of the extremity in which the wound is seated, has been recommended and practised, even of late times, by those who have had considerable experience, and more particularly by Larrey, who recommends it in the Surgical History of his Military Campaigns. He, however, advises it only in cases of chronic tetanus, or at the very commencement of those symptoms which are of a more acute kind. He does not give very many cases, however, and I do not find any direct evidence in favour of the proposition. But the trial has been made in many cases, and, certainly, the results, as far as I am acquainted with them, go completely to show that the practice is a bad one, that there is not sufficient chance of arresting the progress of disease, to induce you to perform amputation with that view.

In the treatment of tetanus, you will find that very different modes have been adopted, and these have been so various, and so different from each other, as to show that no clear principle of treatment has as yet been discovered. The rigidity of the muscles has led to the employment of antispasmodic remedies, more particularly of opium, and, I believe, of opium in large quantities. Opium does not produce the same effect on a patient labouring under tetanus as it does on a person in health or having any other disease. The state of the patient at that time, renders him very unsusceptible of its effects; so far, therefore, you can give it in large doses. Dr. Babbington gave 180 grains of opium in eleven hours. An ounce of the tinctura opii has been given, many times, in tetanus, in the course of four-and-twenty hours. If you look to cases of idiopathic tetanus, you will find many in which the free and abundant exhibition of opium has been considered to have cured the complaint; but we do not find the same result from opium in sympathetic tetanus. Here, however, it is often employed for the purpose of lessening the severity of the spasm, and often with considerable benefit, so far as that goes. It is not to be considered, if employed alone, as a very powerful or certain means of cure; though in combination with other means it may be very useful.

Bloodletting is to be resorted to in tetanus, particularly in the early stage. Patients have been bled largely, and, in certain cases, the appearance of the blood drawn has seemed to justify the operation. The blood is buffed and cupped; and this, in conjunction with the state of the pulse, has certainly shown that bloodletting might be considered as an auxiliary remedy, although, if employed alone, it is not capable of accomplishing the purpose in view. Mercury has been employed very largely, so as to produce salivation. Large quantities of mercury have been rubbed on the body, so as to produce salivation in a short time. This, however, has failed to accomplish the desired effect. Indeed, there are not a few cases in which tetanus has come on in patients who were actually under salivation at the time. The powerful relaxing effect, or, rather, the depressing effect, which tobacco has over the nervous and muscular system, has led to the employment of it in glysters. Musk, camphor, and ether, in large doses—in fact, all kinds of remedies that have been supposed to have any power over the nerves and muscles have been used. Bark, wine, tonics, and stimuli, have been given very freely. Sometimes persons have administered wine in very large quantities; but while this had no effect towards a cure, it has appeared as though the free use of wine did not materially tend to accelerate the progress of the disease.

If we were merely then to look over the recorded cases of tetanus, so as to observe the means that have been employed, and the effects that have been produced, we should feel totally at a loss for any principle to guide us in its treatment. It appears to me, that the most successful treatment of tetanus has been from the employment of active aperients, in alternation with antispasmodics, particularly opium; that the cases have done best in which powerful opening medicines have been employed from time to time, so as to keep up a continued action on the bowels, and to prevent the recurrence of that state of costiveness in which the disease is generally found to commence; and, at the same time, that opium has been employed to mitigate the severity of the spasms. In many cases, a successful result has been secured by acting steadily on this plan.

The three objects of treatment, then, on which I myself should place reliance, are first, venesection in the early stage, until the symptoms of general fulness of the vascular system are removed; secondly, the free exhibition of aperients, so as to remove costiveness; and, thirdly, the employment of opium, for the purpose of lessening, or controlling, the very painful spasms. About three or four years ago, I was called to a case of tetanus, in which there was very great danger, and where the plan of treatment I have just mentioned to you, was completely successful, although the case, at the first view, seemed a very unpromising one. It was the case of a gentleman who was about fifty years of age, of a very robust and full habit, accustomed to free living, a man of a very active turn of mind and who had various and important businesses on his hands. He was pursuing his avocations in a very active way at the time he met with the accident that led to the tetanus, which occurred in the hottest season of the year. He was riding, when, his horse having fallen, he was thrown forward, and his face coming to the ground, he grazed the dorsum of his nose against the gravel of the road, so as to make a slight wound there; that was the only actual wound he received. He thought so little of the accident, that he did not discontinue his ordinary pursuits, nor change his ordinary mode of living, which was, as I said, rather a free one. I do not know that he did more than put a bit of brown paper, with vinegar, on the grazed part. However, although the injury was very slight, yet, at the end of about ten days, when the wound was just getting well, on sitting down to dinner, having asked some friends to dine with him on that day, he felt that he could not use his jaw very freely; he felt some difficulty in masticating, and swallowing his food. He was at length induced, more in conformity to the solicitations of his friends, than in accordance with his own feelings, to send for a medical gentleman, who took a little blood, and gave him some opening medicine. Next day he was very much worse, and I, consequently, saw him. At this time the symptoms of tetanus were very manifest.

There was difficulty in opening the mouth, and in masticating; pain behind the sternum extending through to the spine; his pulse full and strong; his bowels, had, however, been pretty effectually relieved by the opening medicine he had taken the day previous. I told him that he should go to bed immediately, for he was then sitting up as if he had been going about his ordinary avocations. He was very largely bled, and I prescribed very active medicines. The blood was found next day to be buffed and cupped; the opening medicine had acted freely, and he was better. I prescribed a repetition of venesection, and a continuation of the aperients, being desirous of producing a still further action on the alimentary canal. He took a pretty large dose of calomel and jalap, which was followed up by a purgative draught composed of senna and salts, but on this occasion, no effect was produced by them. It being a few miles from town, I did not see him in the evening, but the medical gentleman in attendance gave him a large quantity of castor oil, which did not act; he also administered a glyster, but neither did that operate. By the time, then, that I saw him next day, all these medicines had not acted, and all the symptoms were considerably worse: the neck and back had become affected. I therefore immediately directed the administration of the croton oil. He took a single drop in a tea-spoonful of light gruel, and within about an hour, a most violent action was produced in the bowels. He discharged such a quantity of matter of various kinds from them, as altogether astonished him, and all those about him. They seemed to be quite at a loss to know how to describe the quantity. It seemed he had filled and over-filled the close-stool pan, and that so abundant a discharge had taken place from the bowels, as was never before witnessed. This was followed by considerable relief of all the symptoms, but still the complaint went on, and, in fact, it proceeded to the full development of tetanus over the whole body. The treatment of the case consisted, from this time, in the regular administration of the croton oil, so as to secure a continued action of the bowels. In the first instance, a drop of the oil did this; but, after a time or two more, it required a drop and a half, and then the evacuations were very copious indeed. It was observed by the gentleman in attendance, that if ever he had to prescribe any thing again in the shape of antispasmodics, he would exhibit the croton oil, because it had, in this instance a much greater effect than any thing he had ever seen, the muscles, which before were very rigid, being soon very much relaxed; indeed the patient himself acknowledged, although greatly depressed and weakened by the effect, the power that it had in relaxing the rigidity. I need not detail the whole of the particulars of this case; it is enough for me to say, that the tetanic affection proceeded until all the parts of the muscular system were involved, and they were as severely involved, as in any case I ever saw. This gentleman frequently remained with all the muscles of the trunk and limbs in the most violent state of rigidity; he then had convulsions of the most serious kind, so that, although he was a man of strong mind and great resolution, he could not at times help crying out most loudly. It was necessary to exhibit in this case opium and hyoscyamus, in order to control those attacks of spasm. I think the benefit of the antiphlogistic plan, and the free exhibition of antispasmodic remedies in the early stage, was so manifest in this respect, that a moderate dose, first of hyoscyamus, and then of opium, was sufficient to afford relief, although, in other cases, where opium alone has been employed, it has not been found to be sufficient. In the first place, a drachm of the hyoscyamus would very much suspend the spasmodic action for three or four hours, and then another would have the same effect. We soon, however, found it necessary to have recourse to opium, but we did not go beyond a drachm of it in a dose, and, by giving this every six or seven hours, the violent action and great severity of the spasms were obviated; and by the continuance of the two remedies, the regular exhibition of the croton oil and the opium, the complaint gradually subsided, and this gentleman completely recovered. I may mention to you, that his state of tetanus was so considerable, that two or three medical gentlemen who were consulted (his friends wishing to have the judgment of the highest authorities on this occasion), considered the case completely hopeless. This, therefore, is the plan I myself should have recourse to, in in the treatment of cases of this description.

Chemical Injuries. Effects of Heat.—The application of heat to the human body will produce, according to its degree, slight or considerable inflammation, together with vesication and other consequences, or complete disorganization of the part; partial death, or complete disorganization.

Scalds.—The injury that is produced by the application of hot water to the body, is denominated a scald; the effect that can be produced here is limited, because the temperature of boiling water does not exceed 212 degrees. The transient application of hot water to the body will produce vesication, inflammation of the surface of the skin, effusion of serum under the inflamed surface, and the elevation of the cuticle. If hot water be applied for a longer time, it will produce considerable inflammation of the skin,—inflammation so considerable, that part of it may mortify or perish, and a superficial slough be produced, just in the same way as in mortification occurring under other circumstances.

Burns.—Heat applied to the body in other forms completely decomposes the parts to which it is applied; reduces it to a dry, brown, charred substance, which becomes corrugated, shrivelled, or curled up, as far as the other living parts will admit of it. The important points for consideration, therefore, are, the degree and extent of injury in those cases,—the degree of injury, that is, the degree of heat that is applied to the textures of the body; and the extent, that is, the quantity of surface which is involved in the mortification. The prognosis, however, turns chiefly on the extent of the injury; for a slight degree of injury, if it occupy a large surface of the body, will produce very serious effects, while the highest degree of injury, if it be confined to a small point, is of no very great consequence. The nature of the inflammatory process, that is, the inflammation itself, the suppuration, the ulceration, and the granulations which are their consequences, and the mode of managing or treating them, are just the same, in point of principle, as in inflammation produced in any other way.

I should mention to you, with reference to the decomposition, the shrivelling up of the part of the body to which the heat has been applied, that the portion that is thus deprived of life is generally called an *eschar*, from the Greek, *eschara.* Eschara, in Greek, means that part of an altar on which sacrifice has been offered, and which, in consequence, has become charred and discoloured. Hence a portion of the body charred and discoloured has been called an eschar. The word slough denotes a portion of the body which has lost its vitality in consequence of that change which is termed *gangrena*, mortification, a loss of part of the body consequent on the want of a peculiar vitality. Eschar is the loss of vitality in a part of the body, in consequence of the application of heat, or some other chemical application. That is the proper distinction between the two terms, although, sometimes, they are used indiscriminately.

Now, when a considerable degree of heat is applied to a large surface of the body, the disturbance immediately excited is fatal within a short period of time. If you consider how serious a degree of local uneasiness, and how much febrile disturbance, are often produced, even by a boil, that is, an inflammation coming to a small point in the skin, you will not be at all surprised to find, that patients should die very quickly, if nearly the whole of the skin be seriously burnt. In cases where the injury is less considerable in point of extent, violent sympathetic disturbance of the respiratory organs and of the stomach is produced; breathing is carried on very imperfectly;

t is laborious; the pulse becomes irregular; coldness and shiverings are produced; there is excessive thirst; and, in fact, the patient sinks in a few days, in consequence of the injury. Where the symptoms are not such as to endanger life, there may be very serious injury produced to the parts which are burnt. Hence deformity may ensue, or the office of the part may be considerably impaired. Deformity and impeded motion, or function, therefore, are found, very frequently, to take place from burns where life is not at all in danger.

Treatment.—In the treatment of burns, so far as the local management goes, two apparently opposite plans are frequently had recourse to. In the first place, when the injury is slight and superficial, we apply cold. If heat have been applied to a part of the body, so as to produce inflammation of the skin without vesication, the application of cold will, perhaps, check the progress of the inflammation, prevent vesication, and occasion a speedy disappearance of all effects. Cold water, saturnine lotion, and vinegar and water, may be applied for these purposes. Sometimes it has been proposed to use spirit and ether, in order to increase the evaporation. Scraped potatoe is a popular mode of applying cold to the surface in cases of this kind. If, in consequence of the cold, the patient becomes chilled, and is inconvenienced, of course it must be discontinued. You may then employ, particularly if vesication have taken place, or ulceration be likely to follow, either a soft poultice, or the common application to a burn, that is, the liquor calcis, (a mixture of lime-water and olive oil), which keeps the part in a very comfortable state.

It is often a question, whether you ought to open vesicles or leave them untouched. The truth is, I believe, that this is a point very often of little consequence, if you do not detach the entire skin. If inflammation go on, ulceration will be produced; the opening of the vesication is of no particular advantage.

Now, in many serious cases of burns, there is very considerable depression of the powers of the system. The pulse sinks and becomes feeble. There are coldness and shiverings. In fact, that state is produced in which the application of cold is quite out of the question. Nobody would think of applying cold to a patient in the state in which he is often found after a severe and extensive burn; it would be the way to extinguish the feeble remnants of vitality to a certainty. Here the state of the system is the main object of attention. If you have a slight superficial burn, you attend merely to the local treatment, that is the only point about which you need be anxious; but when you have got an extensive injury, and the patient is in the very dangerous condition I have mentioned, your main object is to attend to the state of the system. The treatment recommended by Mr. Kentish, in such cases, is the most applicable. He founds his treatment on the analogy between what should be done on the application of heat to the body, and the course of proceeding to be adopted, where the body has suffered from excessive effects of cold. Now I have already had occasion to mention to you, that where a part suffers from cold, it is quite wrong suddenly to apply a great degree of heat. Mr. Kentish says, in the same way, where the temperature of the part has been very highly raised, that you should gradually lessen it to bring it down to the temperature of the sound state. Whether this is exactly so or not, it perhaps is not necessary to inquire. His treatment is very successful, however, and it is that of washing the part over with the turpentine liniment, and then covering it with cloths dipped into the liniment, the liniment being made of the oil of turpentine, and yellow basilicon. This is a stimulating application. In conjunction with this, the employment of opium, in moderate doses, is to be had recourse to, in order to relieve the external pain, and the administration of either a little wine and water, or brandy and water, where there is that faintness which frequently occurs. This is the mode of treatment which has been proposed in cases of extensive burn, by Mr. Kentish, who had great opportunities of seeing them in their worst forms, having practised in the neighbourhood of coal mines, where extensive injuries of this sort are of very frequent occurrence.

In the subsequent treatment, the application of the turpentine liniment is continued until ulceration and suppuration commence, and then other milder applications are proper. You treat the wounds on the principles already detailed. You may apply a soft poultice, and when granulations commence, you may treat them according to the plan applicable to ulcers.

Of course you are not to continue the internal stimuli longer than the existence of the circumstances which require them. You would not think of giving a patient under disease of this kind, wine, opium, or brandy, for any length of time. As soon as the state that calls for these is past, you would discontinue their employment.

Now, the general treatment of burns will differ very considerably, for the causes of these accidents are various. Sometimes the injury produced by the application of heat, creates considerable excitement, instead of the state of depression I have just mentioned. It is necessary, then, to employ pretty active antiphlogistic means; to take blood, &c. Frequently, a state of excitement comes on in scalds, about the time when ulceration and suppuration commence. I remember, not very long ago, having in this hospital two instances of men who had scalded the lower extremities very extensively, in both of whom, when matter began to be discharged from the surface of the wounds, there was violent febrile disturbance, and it was necessary to bleed them very largely, and repeatedly.

In the progress of those cases towards cure, when ulceration commences, and when the parts that have lost their vitality are thrown off by this process, you will find that the completion of the cure takes place with very different degrees of rapidity. It sometimes happens, particularly in scalds, that the external stratum of skin loses its vitality, and sloughs, but that the sloughing process does not extend through the whole thickness of the skin; there is only a destruction of a part of the surface. Under such circumstances the ulcer which is left after the detachment of the superficial slough, is, in fact, only an ulcer of part of the skin, and as soon as such slough is detached, you will find that, almost immediately, the surface of such a sore will heal. In fact, this is not like an ordinary sore, which can only commence healing from the edges; it is only a sore of part of the skin, and you will frequently see ulcers of very great extent under such circumstances, perhaps double the size of the palm of your hand, cicatrise over in twenty-four hours. Now, in those instances in which the whole of the skin is defaced, so that the loose cellular membrane is exposed, you find that the production of loose granulations is very great; that those granulations are very exuberant. They arise above the surrounding skin, and difficulty is experienced in keeping them down, and, consequently, in effecting cicatrisation. Indeed, I do not know any case that is more tedious in healing than a burn of that kind.

It is necessary you should pay particular attention to the position of the affected part, in many instances of burns. You will recollect that the granulations which are produced in healing a sore, become absorbed after the cicatrisation has been accomplished; then the parts are contracted, and, consequently, when any part of the body is burnt where there is a bend, as there is at a joint, you will find, that if you allow that part to remain in the bent position, this contraction and absorption of the granulations will unite the two portions of the limb together in such a way, as to fix them permanently in the bent position, and thus to produce not only a degree of deformity, but a very serious diminution of the action of the joints afterwards. If you were to allow the fore-arm and arm to remain bent when the two surfaces were in a state of granulation, they would unite together by the inosculation of the granulations, to a very considerable extent, and thus you would have a sort of bridle formed by the cicatrised integuments, confining the limb in a bent position. In the same way the jaw may be drawn down even to the sternum, when the neck has been burnt; and thus a most serious and dreadful deformity would be produced. Under all circumstances, therefore, attention to position of the part during the time the granulating process is going on, is absolutely necessary.

In instances where this point has been neglected, where contraction has arisen in consequence—where a bridle of cicatrised integuments has been produced, relief has been obtained by dissecting out the portion that forms the bridle; and, when the skin on each side is round, so that it can be brought together after the cicatrix has thus been removed, the use of the part has, in many instances, been very completely restored. We are indebted for this mode of treating this condition of parts after burns, to my colleague Mr. Earle; he first directed attention to it, and, in many instances, he has succeeded in removing very serious and very extensive contractions, by that simple mode of proceeding.

There are two modes of treating burns, which have lately been proposed, which I have not myself had an opportunity of trying, but which have been proposed on such respectable testimony, that I think them worthy your notice, and I should myself be inclined to give a trial to them. The one is a remedy of which, perhaps, one would not easily have thought—the application to the burnt surface of raw cotton. It was first employed in America, and from the following circumstance. A child had been extensively burnt, and there were no means at hand for the treatment usually adopted in such cases. In order to put the child quietly out of the way, he was laid in a basket of cotton. It was found that the pain seemed soon to be diminished, and the child continued quite quiet. They took the hint, and suffered the child to remain, covering it lightly over with raw cotton. The pain went off, and although the burn was very considerable, the case did very well. This has led in America to the practice of covering over the parts with raw cotton, putting a slight covering over them. When the discharge commences, the covering which has been thus placed upon the parts, forms a sort of cake. If the discharge seem to be oosing out, a fresh quantity of the cotton may be applied, and thus the parts heal entirely under this cake, and no further treatment or dressing is required. I believe that in some instances in which this plan has been tried, it has been found to answer very well. The other plan of treatment which I have alluded to is, that of covering the parts over, copiously, with fine wheaten flour. Taking an ordinary flour-dredger, as it is called, that is, a tin receptacle, the top of which is perforated with holes, you sprinkle the parts over until they are covered with a thick stratum of the flour; in fact, proceeding with it just in the way I have mentioned to you with respect to the cotton. This has been stated to be an effectual, a very effectual mode of treating burns, but I have not myself had any experience on the subject.

Effects of Acrid and Escharotic Substances.—There are various chemical substances which are stated to have the effect of immediately decomposing the textures of the body. The effect of pure potash is well known to medical men, who are in the continual habit of making use of it. *Ammonia, lime, strong acids, nitrate of silver, muriate of ammonia*—all these various substances are employed as *escharotics*, as they are called, that is, they make an eschar. They decompose, they burn or destroy, the part of the living body to which they are applied, converting it into a brown or dark-looking substance. They all deprive the part to which they are applied of life, although they do this each in its own peculiar way, that is, the appearance of the part after the application of the substances, varies in each particular instance. The action of lime is peculiar in some instances. Lime, when applied to the cornea of the eye, completely destroys the transparency of the part, and reduces it into a fine powder. The particular effect of nitrate of silver, when applied to a part of the body where there is a discharge, it is well known, produces a whitish film on the surface. The truth is, that nitrate of silver is decomposed whenever it comes in contact with any animal discharge, so that muriate of silver is formed, which constitutes the white pelicle after the nitrate of silver is rubbed on the surface of an ulcer.

LECTURE XIX.

Injuries of a Mixed Nature. Poisoned Wounds —Hydrophobia—Bites and Stings.

GENTLEMEN,—Continuing the subject of injuries, I proceed to speak to you of poisoned wounds.

Hydrophobia.—The term hydrophobia, which means, simply, a fear of water, is applied to denote that dreadful, and, indeed, as far as our present knowledge extends, invariably fatal disease, which is also called *rabies*, or *rabies canina*—canine madness. It is a disease produced in the human frame by the introduction of a poison through the medium of the bite of an animal affected with the same disease. This poison is introduced with the saliva ; that is, the saliva of an animal labouring under hydrophobia, or rabies, acquires that peculiar, poisonous property which renders it capable of exciting similar disease in other animals. No solid part of the body possesses the property of communicating this poison, nor does any other fluid than the saliva—the secretion of the salivary glands. It has sometimes been vaguely supposed, that the perspiration and the breath of an animal labouring under hydrophobia, were capable of affecting other animals or individuals ; but this is a mistaken idea. Dupuytren had an opportunity of ascertaining whether the blood of an animal labouring under hydrophobia was at all affected, or, at least, whether it possessed the virulent property which the saliva does. He took the blood of a patient affected with rabies, and applied it to a recent wound made on a dog, without this animal becoming affected ; and he applied the blood of a dog, labouring under hydrophobia, to the recent wound of another ; he even injected the blood of a rabid dog into an healthy dog, and he found that no effect was produced through the medium of this fluid. In this respect the disease is communicated like the small-pox ; but hydrophobia cannot be communicated, like the small-pox, through the atmosphere. It requires the saliva of a living animal, labouring under the disease, to be applied through a wound ; that is the only way in which it can be conveyed.

Now it has been inquired, and you, also, will very naturally ask, whether hydrophobia ever arises spontaneously, either in animals, or in man. It is difficult to answer this question in the case of animals ; because, when symptoms of the disease show themselves, we cannot tell what circumstances may have occurred to the animal previously. We can hardly arrive, therefore, at a clear negative proof on the subject. I may observe, however, that as far as our knowledge goes, we are not aware of its ever arising spontaneously. In fact, we are not aware of its being produced by internal causes, nor any external influence, except through the application of saliva in the way that I have mentioned.

Gentlemen who have kept large sets of dogs, have succeeded in keeping this disease from their kennels, by making every dog perform a quarantine, before he is allowed to join the pack.

In some isolated places, where cases of hydrophobia have previously been very numerous, a series of years has passed without this disease having made its appearance. Thus it is mentioned, by Mr. John Hunter, that in Jamaica, where the number of dogs is great, no case of hydrophobia has been known to take place for forty years. And the mention of Jamaica induces me to state to you, that the observation that heat favours the production of the disease, is by no means well founded. It has been supposed that hydrophobia can take place only during the hot period of the year, but this is not by any means the case. I recollect a case of hydrophobia in this hospital, which was under my own care. The patient was excessively thirsty, but could not take any fluid, on account of the spasms which attend the complaint; and I got some ice, for it was in the winter-time, and the child took that into its mouth, and ate it with great avidity. It was a mode of, in some measure, allaying the thirst, without exciting the violent spasms which take place from the appearance of water.

Hydrophobia is said to be rare in the West Indies, although the dogs are numerous. Heretofore it is remarkable that hydrophobia did not exist in Egypt; and the French observed, during their residence there in their last campaign, that the complaint was not known either in the canine or in the human species. We have every reason, then, for supposing that it does not originate spontaneously in the dog. May it not, however, originate spontaneously in the human being? As far as we have the means of judging, we may answer in the negative. It is true that an aversion to water, something like the symptoms which occur in hydrophobia, is seen to take place in other diseases—something like the spasmodic action of the muscles about the throat. In fact, there is a kind of sympathetic hydrophobia, which may consist of a disease of a nervous kind, combined with some other affection; but when we speak of the hydrophobia which is distinguished by the term rabies, we certainly are aware of its existence only in those cases in which the poison has been introduced into the system through the medium of a wound.

The animals liable to hydrophobia, besides individuals of the human subject, are, the dog, the wolf, the fox, the cat, and the ordinary domestic herbiverous animals; that is, the horse, the ass, the mule, the cow, the sheep, the pig, and I suppose I may say, the goat. I believe it is not communicable to birds. Perhaps other animals, besides those I have just mentioned, may be susceptible of it; but experiments have not been made to communicate it to them, and they are not of themselves placed under circumstances which would lead them to contract the disease in the manner of other animals.

I believe the disease can only be communicated by the dog, the wolf, the fox, and the cat. Now the three first are very nearly allied in species, and, in fact, they are capable of breeding with each other. The late Duke of Richmond lost his life in consequence of hydrophobia contracted from the bite of a fox in Canada. The wolf suffers very much from hydrophobia. Numerous cases occur in those European countries which wolves inhabit in great abundance, of hydrophobia being communicated to dogs and other animals by the wolf. Many experiments were made at the veterinary school at Alfort, to ascertain if it could be communicated by herbiverous animals, and professor Dupin found, that when a sponge, moistened with the saliva of a sheep or a cow labouring under hydrophobia, was applied to a recent wound of the same kind of animal, no disease was communicated. The professor observed, too, that if a sponge, moistened with the saliva of a rabid dog, was so applied, the disease was then communicated. He found that when sheep, affected with hydrophobia, were allowed to mix with the flock, no injury was sustained; that they did not attempt to bite or do any mischief to the other animals near them. I believe no instance is on record of its communication to the human subject through any other than one of the four animals I have mentioned. I believe it is not likely to be communicated by quadruped herbiverous animals, for it is not the practice of these animals to bite in defence; and as the saliva alone of these animals could produce the disease, the absence of the disposition to bite prevents the chance of its communication.

It is an important question to ascertain, whether the disease can be communicated from one human being to another, or from the human species to brute animals. But there is no instance known in which it has been communicated from one human being to another. Great fear has been excited, however, on this point. It has been supposed, that persons labouring under hydrophobia, are disposed to bite and snap at others, and that great danger would arise of communicating the disease in this way. But, in the first place, it is not a common thing for a human being to have the disposition to bite, and, probably, if a bite took place, no effect would be produced by it. In fact, numerous experiments of this kind have been made on animals; that is, the saliva of a human being labouring under hydrophobia, has been inserted into the recent wounds of various animals, but these experiments have all failed, except in one instance, and that is mentioned by Majendie and Breschet. They took the saliva of a patient labouring under hydrophobia in the Hôtel-Dieu, and applied it to the recent wounds of two dogs: they did this on the 19th of June. On the 26th of July, one of the two dogs thus inoculated went mad, and that dog bit two others, one of which died rabid on the 26th of August; so that if this experiment be correct, and the high reputation of those who are said to have made it leads us to place credit on the statement, we must, I suppose, admit that the saliva of the human subject has the power of communicating the disease. This, however, is the only instance, or fact, that I know of, which at all tends to establish the point.

We have nothing to do with the disease as it appears in the dog, yet it is proper that medical men should be acquainted with some of the points relating to its appearance in that animal, because their opinion is sometimes asked, in cases of bites received from dogs, whether a particular animal may be supposed to have the disease or not.

Now, in the first place, the dog does not labour under any horror of water,—any aversion to fluids. The dog will lap, and drink, and go into water, without displaying any of those symptoms which are produced in the human species; and, in this respect, the disease cannot be termed hydrophobia in the animal. Nor in the dog are there exhibited any of those symptoms of great rage which might justify the term rabies, which means madness, or rage. When the dog has hydrophobia, his manner becomes considerably altered; he becomes peevish and sullen; he scarcely will take notice of those to whom he has been accustomed; he will get away from home, and run wildly about. He will not go out of his way to attack individuals, or brute animals, but he is very apt to bite those that come across him. He picks up and swallows small objects; straw, bits of grass, and dirty substances of any kind. When he is tied up, and towards the latter period of the complaint, he will gnaw and bite the objects around him; he will grow angry, and become very wild in his appearance, especially if he is approached; his jaws are continually covered with tough saliva, and at last he dies.

The disease is usually communicated to the human subject by a bite; in fact, the saliva of the rabid animal must be brought into contact with a recent wound, or with an ulcer; that is, with a breach of the surface of the body. It is not absolutely necessary that this should be done through the medium of a bite. I need not observe to you that, several years ago, a case occurred which attracted the attention of the public very much,—the case of a lady of rank, a Mrs. Duff, to whom the disease was communicated in rather an unusual way. She had a French poodle, of which she was very fond, and which she was in the habit of allowing to lick her face. She had a small pimple on her chin, of which she had rubbed off the top, and allowing the dog to indulge in its usual caresses, after it had become rabid, it licked this pimple, of which the surface was exposed, and thus she acquired the disease of hydrophobia, of which she died.

Wounds are not all equally effective in conveying the poison. In the first place, a person may be bitten on a part covered with clothes, or on a naked portion of the body. In the former case the teeth of the animal are in a manner wiped, or cleaned, by passing through the cloth, and thus the virulent matter may be removed from the teeth before they reach the body. In this manner a great proportion of the bites that are inflicted through covered parts of the body are unattended with bad consequences. Animals, too, are not all equally effective in communicating the disease; the effects from the bite of the dog are much the most virulent, and hence rabies canina, as it is called, is much the most frequent.

There is a case on record in which one dog bit four persons and twelve dogs. All the dogs acquired hydrophobia, while the four human subjects escaped it, though they took no precaution, and employed no kind of treatment. In one instance, in which twenty persons were bitten by a single dog, only one of them had hydrophobia. There are other instances, however, in which the bad effects have been observed to be in a much greater proportion than this. Twenty-three individuals were bitten by a female wolf; thirteen of them died in the course of a few weeks, besides several cows that were wounded by the same animal. In another case, in which ten individuals were bitten by a wolf, nine died; these were cases that occurred in France. Of twenty-four bitten by the same kind of animal, near Rochelle, eighteen died.

There is nothing peculiar in the mode of healing, or the progress, of a wound inflicted by a rabid animal; the injury goes through the natural process, just as a simple wound would proceed, and it heals without our being able to distinguish any difference in it.

An interval of time elapses between the infliction of the wound and the occurrence of the symptoms, or the disease itself—the madness. In this respect the hydrophobia corresponds with small-pox, with cow-pox, with scarlet fever, with measles, and with syphilis; there is not, however, in hydrophobia, any correctly defined and regular period between the receipt of the wound and the appearance of the disease, as in several instances I have mentioned; though hydrophobia certainly resembles syphilis more than the others, in which the period between the infliction of the injury and the occurrence of the symptoms is uncertain. Generally speaking, the disease shows itself in between thirty and forty days from the infliction of the wound. In a considerable number of instances that were collected by a medical society, the period varied from thirty one days to seventeen months. There may, possibly, be some difference in the period in cases of wounds received from different animals, but there are hardly data enough to determine that point. In fifteen patients, whose cases occurred under the observation of one surgeon, the time varied from fourteen days to fourteen weeks. Seventeen persons were bitten by a wolf, ten of whom had hydrophobia, one on the fifteenth day and one so late as the sixty-eighth day. Fifteen persons were bitten by a mad dog on the 27th of January; ten of them received bites on the naked flesh, and of these five died; the deaths occurred, two on the 27th of February and three in April. Dr. Bardsley, of Manchester, has given an account, in the Memoirs of the Literary and Philosophical Society of that town, of a case of hydrophobia, in which, after the most accurate inquiries he could make, he could detect no cause for the occurrence of the symptoms, except the bite of a dog, supposed to have been mad, which had been received twelve years previous.

It has been sometimes observed, that changes take place in the part that has received the wound before the symptoms of hydrophobia show themselves. Ordinarily speaking, the wound is completely healed, and patients have very often forgotten the occurrence of it before the hydrophobia appears. But it has been noticed, that the wound sometimes becomes a little red, or the part where the wound was is a little swelled, a little heated; and pain is felt in the limb, shooting along the limb towards the trunk of the body, before the hydrophobia shows itself; but in many cases nothing of this kind occurs, and patients commonly have forgotten that a wound was ever received.

The disease has sometimes been divided into a first and second stage. In fact, in the first instance, the patient usually experiences some pain in the head, some undefined indisposition; and, very soon afterwards, such a symptom as is peculiarly characteristic of the disease shows itself; that is, the patient begins to evince that very peculiar symptom, aversion or dread of drink, and also falls into a state of high salivary excitation. The dread of fluids is very often discovered by the patient, accidentally, who, on proceeding to take some liquid or other, finds, on putting it to his lips, or attempting to swallow it, the most violent convulsions of the mouth and a difficulty of deglutition; and he throws away, probably with great horror and aversion, the fluid he was about to drink; he feels unable to get a single drop down his throat, and after having once experienced this sensation, nothing can prevail on the patient to repeat the attempt; or if he do (which is seldom the case,) at the request of friends, or medical attendants, who are anxious to ascertain the extent of the affection, he just brings the vessel near to his mouth, and then suddenly dashes it away again. There is a convulsive spasm of the muscles of the throat and subsequently an agitation of the whole frame, which renders it utterly impossible for a person, even of the most determined resolution, to swallow the fluid. Very often the mere sound of a liquid poured into a vessel will bring on a spasm of this kind. A little air blowing on the patient; the sight of any bright object that raises in the mind the recollection of liquid, or any thing resembling it, will be found to bring on these effects. It has sometimes happened, that persons of strong minds who have been resolved to overcome these feelings, have attempted actually to swallow, but that act has often produced a sensation nearly amounting to suffocation.

In conjunction with this, there is a peculiar excitement of the nervous system. The slightest causes will bring on agitation and alarm; the patient is pursued by a thousand phantoms which intrude themselves on his mind; he labours under strong fears; he holds conversation with imaginary persons; he supposes men are coming into the room to take him away; he fancies himself in the greatest danger, and surrounded with difficulties. These thoughts pass through his mind with the greatest rapidity, and keep him in a state of the greatest distress. Such a condition is, of course, attended with acceleration of the pulse, pain of the head, a foul state of the tongue, and disturbance of most of the organs of the body; and you will naturally suppose that it cannot last very long.

Hydrophobia terminates fatally in a period varying from between six-and-thirty hours, to four or five days. Sometimes it ends fatally in a shorter period. I have seen it in a young child end fatally in about four-and-twenty hours. The high state of excitement of the nervous system soon wore out the feeble powers of childhood.

The symptoms are not invariably the same in all individuals; there are periods of ease and of extreme suffering, in most cases. Sometimes the mental powers remain very clear throughout the complaint; sometimes a condition of delirium, or one very nearly approaching it, prevails throughout the greater period of the disease. But, altogether, the state of the nervous system is so peculiar, that a person who has once seen hydrophobia, cannot fail to recognise it again; it cannot be confounded with any other disease. I think nobody who has once seen it will raise the question, which has, however, been agitated, whether there is really hydrophobia or not. The affection is so totally unlike any other disease, that I do not know any one disease which can be mistaken for it.

Examinations after death have not elicited very satisfactorily the nature of this affection. The morbid appearances do not correspond in degree or importance with the severity of the symptoms which the full development of the affectiou presents. Slight appearances of inflammatory affection are found about the pharynx or œsophagus—perhaps in the trachea. Sometimes a similar appearance may be found in the stomach. Determination of blood, vascular congestion, unnatural fulness of the vessels, and perhaps effusion of a serous nature on the pia mater, are found in the head.

Treatment.—With respect to the treatment of hydrophobia, I can only observe to you that we are not acquainted with any plan, or any medicines which seem to exercise any power over this dreadful complaint; at least, no authenticated instance exists of recovery, after the symptoms of hydrophobia have once manifested themselves. Opium has been very freely administered, by the mouth, in the form of glysters, and also by injection into the veins of the animal or patient affected, and immense quantities have been given in these various forms. Here, as in tetanus, opium exerts much less effect on the frame than it does under ordinary circumstances, so that immense doses can be borne. Magendie observes, that a certain dose of opium injected into the veins of a dog, has sent that dog to sleep; but that if ten times that quantity be injected into the veins of a dog affected with rabies, it has no effect. He also remarks, that a singular effect is produced on the animal economy, by causing a state of artificial plethora of the blood-vessels—that is, by injecting warm water into the veins. He tried this in the human subject. He threw a pint of tepid water into a vein, and he found that the symptoms were greatly mitigated; indeed, that they seemed, for a time, altogether removed. The patient was easy, and slept, and it seemed as if great benefit would be the result. The symptoms, however, again came on, and the patient died at the end of the fifth day.

Not long since a proposal was made, founded on a mode of treatment suggested in the East Indies, of adopting very copious venesection in hydrophobia. You will easily suppose that the loss of blood had already been tried in cases of this kind. However, patients have been bled very largely in cases where it was said, in the East Indies, to have a favourable effect, and bleeding to a large extent has been adopted on that suggestion in this country. The abstraction of a large quantity of blood, for it is proposed to bleed to fainting, is likely enough to mitigate the symptoms for a time, but it has had no effect in protracting the fatal termination of the disease.

Prevention.—We come, then, to the only point in which our medical or surgical experience can be of any use to us, that is prevention. The period that elapses between the infliction of a wound and the development of hydrophobic symptoms, affords us ample opportunity of attempting this. Various means have acquired popular celebrity as preventives, to which we are unable to attach any real efficacy. It has been supposed, that dipping the patient in salt water soon after the wound has been received, will prevent the disease from occurring. This is a popular opinion in the West of England. I remember very well, when I lived in the country, that it used to be said, in Gloucestershire, "Such a one has been bitten by a dog, and has therefore gone down to the sea-side." On the Bristol Channel, there were persons in the habit of ducking such individuals, whom I believe they often almost drowned and then thought they had cured. "Ormskirk medicine" (Ormskirk in Lancashire,) consisting of a variety of things which I do not at present recollect, has been said to have a beneficial effect; but we can easily suppose how that medicine, or any other, has acquired celebrity; the truth is, that very few persons who are bitten by dogs, go mad; and, therefore, when those medicines are resorted to, and when patients have not hydrophobia afterwards, the cases pass with the vulgar for cases in which the medicines have acted as preventives, although I need not observe to you, that individuals would not have had hydrophobia if they had resorted to no such means. In fact, I may observe to you, that hydrophobia is much less common than people suppose. During the last thirty years, I question whether there have been more than six or eight cases of hydrophobia in this hospital; and I believe I may say that, for the first fifteen years, not a single instance of it appeared here. Certainly cases of hydrophobia have been rather more numerous of late; but, twelve or fifteen years ago, one might be in company with medical men of considerable practice, and not meet with one amongst them who had ever seen a case of hydrophobia; so that it is by no means so common an occurrence as it has been supposed to be.

Now, inasmuch as the complaint is produced by the introduction of a poisonous substance into a wound, common sense seems to point out one particular means of prevention, and that is ablution—washing the part very thoroughly to get rid of the poisonous matter. But this, although it seems so simple and obvious a course, is generally neglected. I do not think persons take any very great pains in this way to get the poisonous matter from the wound; and hence, perhaps, it was this (although by no means to be considered as a certain preventive,) which caused Dr. Sully to turn his attention to the disease. Dr. Sully has published a small tract on the subject, the principal object of which is to recommend ablution of the wound. He recommends that tepid water, at about 90 or 100 degrees of heat, should be used, which would have the effect of rather increasing the bleeding; that it should be poured from a tea-kettle into the wound, the vessel being held four or five feet above it; or that the water should be injected into the wound through an instrument like the common stomach-pump, so as to force the liquid into all the parts involved in the injury, and that the ablution should be carried on for three or four hours.

The practice of applying caustic, or of cauterising the part, has been frequently tried, more especially where the wounds have been extensive, or have been so situated that persons have been desirous of avoiding the use of the knife. We naturally conclude that if a powerful escharotic can be applied to the whole surface of a wound, that it will neutralise or destroy the effect of any poisonous substance adhering to it. The objection to this is, that we cannot be completely certain of applying the escharotic to the whole surface; some of the saliva would, perhaps, escape the touch of the cautery. It happened to Mr. Hunter to trust to this, in the case of a young subject, a branch of a family of consequence, who had been bitten in the face, and in whom, unfortunately, hydrophobia afterwards came on, of which the individual died. The application of caustics, therefore, is not to be considered a safe mode of proceeding. A third mode of proceeding is excision of the bitten part; cutting out of the whole of the wounded surface; taking care to remove, with the knife, the whole of the parts that have been injured. And I need not observe to you, that, if this be effectually done, there can be no risk of subsequent hydrophobia. It is very necessary before you begin the operation of excision, that you should ascertain, as accurately as you can, how far the teeth of the animal have punctured, and take care that your incisions go beyond the part to which the tooth has reached. When you consider the great importance of the object you have in view, that of rescuing the patient not only from death, but from a kind of death most terrible to the individual, and most appalling to all those who are interested in his well-being, you will consider it best to be rather liberal than sparing in the use of the knife; that it would be better to put the patient to some little additional pain, better to leave a slight scar, than to allow any chance of the poison being introduced into the system.

This is the chief means of prevention to be relied on; but the act of excision is not inconsistent with ablution. In fact, Dr. Sully recommends excision in the strongest terms. He recommends ablution of the wound, and then excision; first of all to cut away the fragments of the wound, if it be at all torn, and then to cut out the whole surface of the wound. The practice of excision need not be confined to the time immediately following the infliction of the wound; it will answer the purpose very well if it be done several hours after the wound has been received.

Recollect what I have mentioned to you on the subject of the interval that elapses between the infliction of the wound and the appearance of the symptoms. Some have supposed, that the poison remains in the part from the time at which the wound is inflicted, till the symptoms commence. Of course we have no certain knowledge on this subject; but it is not unlikely that the poison communicated to the part may not extend its effect beyond that part for a time; and then a question arises: In how long a time after a wound has been inflicted, may excision be practised with success? Now, we have no clear knowledge on this point. So far, however, as it extends, and as reasoning on the obvious facts directs us, it is very probable that the excision may be adopted even some days after the infliction of the wound with success. There is, however, this disadvantage attending excision at some distance after the occurrence of the wound, that we do not know exactly how far the wound has extended; it is while the wound is still open, and in its original state, that we can see its extent, and be sure that we have removed the whole of the injured surface. I think Dr. Sully recommended, besides ablution and excision, the application, to the part, of a poultice or poultices, covered with mercurial ointment. I am not aware of any particular advantage that can arise from their application.

Stings.—In the stings of insects there is a small wound inflicted, and there is an acrid matter introduced into the wound. I speak of the stings of the bee, the wasp, the hornet, and the tarantula spider. The wound is extremely minute, and, of course, the acrid matter which is introduced is very small. It produces a slight pain, a burning or tingling sensation, slight redness of the integuments, with a little swelling of the surrounding part. The application of any cold liquid is sufficient to remedy the inconvenience that arises from a case of this kind.

In fact, the sting of a single insect, bee, wasp, or hornet, produces but a trifling effect. When a considerable number of those stings are received, very serious consequences may be produced in the animal economy. I think it is said that the stings of about twenty hornets, and those of a few wasps, are sufficient to sting a horse to death. A case was lately mentioned, which excited considerable interest, of a gentleman in France, who was walking in his garden with his morning-gown on, and his breast open. A large bee-hive was upset, and he ran to put it right again; the bees fixed upon him, and stung him about the throat and chest; he immediately ran into the house, and the persons around him endeavoured to liberate him from the insects as soon as they could, but he said he felt himself sinking, or dying, and, in fact, this was the case. The action of the heart became very much enfeebled, the pulse sank, the breathing became interrupted, anxiety, agitation, and alarm arose, and he died in about ten or fifteen minutes.

There are certain insects which bite, and which do no sting; that is, they make a small wound, but no venomous or acrid substance is introduced into the wound. This is the case with the flea, bug, gnat, scorpion, &c. The bites of these insects produce slight inflammation, somewhat similar to that of the insects I have before named; but a great number of them may be inflicted, without producing any very considerable effect.

LECTURE XX.

Hydrophobia continued—Bites of Venomous Serpents—Injuries received in Dissection—Malignant Pustules.

I MENTIONED to you, gentlemen, in the last lecture, that hydrophobia can only be produced by the application of the saliva of a rabid animal to a recent wound. You may, probably, have inferred from this statement, although I did not specifically mention it, that the saliva of a rabid animal, in producing the disease, does not act through any other medium, than that of a recent wound. It may, for example, be applied with impunity to the entire surface of the skin, the skin covered with its cuticle; and it may also be applied with impunity to the surface of mucous membranes. It does not produce disease by either of these modes of application.

Bites of Venomous Serpents.—A very active poison, that is, a poison capable of producing very serious effects in other animals through the medium of wounds, is produced by certain serpents. In this respect the serpent tribe consists of two divisions. The one class are quite innocent, those of the other secrete this peculiarly virulent poison, which, when applied to a recent wound in man or beast, produces effects as fatal as those that take place in hydrophobia. The effect, in fact, in the case of a bite received from a venomous serpent, is produced more quickly. The same interval of time which occurs after the bite of a rabid animal, does not take place in the instance I am now alluding to.

In the venomous serpents there is a glandular apparatus in the neighbourhood of the jaw, which secretes the poisonous or acrid fluid. The duct of that gland runs through the centre of what is called the poisonous fang of the serpent. The poisoned fang of the serpent is a very long and sharp-pointed tooth, which is hollow, internally; in fact, the hollow of this tooth is a continuation of the excretory duct of the poisonous gland, so that, when the serpent bites, the poison in this gland passes through the fang into the wound which is inflicted by it. In this respect, you will find that there is a marked difference between the teeth of the innocent and venomous serpent. In the engraving I shall now send round, you will see a representation of the head of the boa-constrictor, a very large kind of the class which is innocent. In the lower jaw, you will observe, that there are four rows of teeth, two towards the palate, and two towards the front of the jaw. In the upper figure, which represents the head of a rattle-snake, which is a poisonous serpent, you will find that there are only two of those parallel rows, namely, the palatine teeth, and that, instead of the others, there is simply a large fang, projecting towards the edge of the mouth, and this is the poison fang. So that, if you could see the open mouths of serpents, you would immediately be able to discover whether they were innocent or poisonous. This fact, however, so far, is not very material, for one cannot exactly take hold of the head of a serpent and open its mouth for the purpose of examining its teeth.

There is a large variety of the venomous serpents. The rattle-snake is a well-known serpent, which is found extensively on the continent of North America. Its venomous power is very considerable. In the East Indies there are several kinds of venomous serpents, but their fatal power varies very considerably. There is one, commonly known by the name of "cobra di capello." It is called in English the spectacled or hooded serpent; for, immediately before it is going to bite, it corrugates and curls itself up, and there appears to be a swelling just behind its head, very like spectacles; it is the *coluber carinatus* of Linnæus. In the West Indies there is a serpent which is most generally observed to be yellowish or spotted, and which is called by the French "Grande vipère fer-de-lance de la Martinique." In this country we have only one serpent possessing a venomous quality, and that is the viper, or adder, (for these two names are applied to one and the same animal, the *coluber berus* of Linnæus.

I believe the poison of the animals I have just now mentioned to you, the rattle-snake and the cobra di capello, acts most virulently; that is, their poison acts the most rapidly upon the vital powers. A fowl, bitten by a serpent, dies in the space of half a minute. The bite of a rattle-snake has proved fatal to a dog in half an hour, but it has required the space of some hours to produce a fatal effect in the human subject; and I fancy it cannot be considered that the bite of these animals is invariably fatal in the human subject, for the quantity of venomous matter communicated by them is various. The bite of the rattle-snake has a different effect, if the animal have not bitten for some time previously, to what it has under other circumstances. Supposing the animal has been kept for some time, and has not bitten so as to exhaust any of its venom, it will then produce a greater effect when it does bite, than it would produce at other times. In the case of the poison of venomous serpents, the same conditions are necessary for its activity, that I have mentioned to you in instances of hydrophobia,—the poisonous fluid must be applied to a recent wound. The poison of the viper, or of any other of the serpent tribe, may be taken into the stomach with impunity. It may be applied, without injury, to the surface of the body. Thus the bite of a single viper will deprive a pigeon of life very speedily, and a single bite by no means exhausts the whole of the poison in the excretory duct of the gland; but you may take the whole of the poison from ten vipers, moisten bread with it, give it to a pigeon, and it will produce no effect. Again, a student, who was assisting in an inquiry of this kind, took bread moistened with all the venom that could be procured from four large vipers, without its producing a bad effect. It is necessary, therefore, that the poison of serpents should be applied to a recent wound. No other mode of application to the human body can produce a deleterious effect.

In the experiments, too, that have been made on animals, it has been sometimes found, that dogs wounded with lancets, on which the venomous matter has been placed, have suffered no injury; while, if they were bitten by a serpent possessing the same species of venom, all the usual effects took place.

The bite of a poisonous serpent produces considerable pain in the part that is bitten, and hence the part swells. This swelling extends, supposing the bite to have taken place in an extremity, towards the trunk of the body. The part not only becomes swelled, but it becomes hard; and if the patient—if the individual or the animal survive, it will turn livid, vesications will arise on its surface, mortification will ensue, and, in the further progress, the cellular texture of the limb which has been bitten will go into a state of inflammation and ulceration; and, in fact, it will assume nearly the state of a limb in which phlegmonous erysipelas is produced. At the same time that these local symptoms take place, very serious effects are produced on the heart, the circulating and nervous systems, and the stomach; the pulse is oppressed, intermittent, and irregular; fainting occurs; the patient is sick; and perhaps the stomach rejects every thing that is taken into it. Paralytic attacks are experienced; the patient or animal is unable to move the extremities, and becomes extremely feeble. The power of voluntary motion seems to be lost, vision is impaired, and the most serious effects are produced; under these circumstances, death generally ensues very rapidly.

Treatment.—In the treatment of injuries of this kind, the first object, of course is, if the case have been seen at a sufficiently early period, to prevent the passage of the poison from the wounded part towards the centre of circulation. Hence it is of importance to apply a ligature between the situation of the wound and the heart; and if this be done very early, the occurrence of the symptoms I have just mentioned, will be prevented. It seldom, happens, however, that a case is seen at a sufficiently early period, to admit of this mode of treatment; and of course, if a ligature be applied, supposing the swelling to have already occurred in the limb, it will very likely aggravate the symptoms rather than relieve them. The application of a ligature, then, for the purpose of preventing the poison passing to the centre of circulation, and to that of the nervous system, can only be adopted with success at the earliest period after the injury has been inflicted. It has been found, by recent experiments, that if poison have been applied to a recent wound, and you apply a cupping glass, so as to produce exhaustion of the air, absorption is prevented; therefore, if you have the opportunity of doing it, the application of a cupping-glass over the seat of the wound would be advantageous in cases of this kind.

Supposing you had not the means of applying either of the remedies I have mentioned to you, that is, if you do not see the case sufficiently early, you would have recourse to what I have pointed out to you as necessary to be done in hydrophobia, namely, careful ablution to remove the matter from the wounded part. You may then cut away the surface of the wound; at all events, you may scarify and open it, to afford the opportunity for more complete ablution; or you may cut it away altogether, so as to remove the immediate seat of the poison. Such, then, are the local means that may be adopted in cases of this kind.

With respect to the general measures, the symptoms that come on are so serious, the rapidity of their progress is so great, and so fatal, that you have very little time for delay; you must select remedies, therefore, that are powerful in their influence, and that you can employ quickly.

Now, general experience has shown, that medicines of a stimulating nature are best adapted for cases of this kind. Indeed, when you see the depression of the circulating system, and the powerfully depressing influence that is exerted over the nervous system, you naturally conclude that stimulants are the most appropriate. It has generally been found that volatile alkali, exhibited internally, has been followed by the best effects. Any medicine of this kind may be given with tolerable freedom. It has been also supposed, that it may be applied with equal advantage to the wounded part, although on this point I think there may be some doubt. A preparation that was called *eau de luce*, has been considered to possess a very beneficial effect; it is about equivalent to a preparation of our own of the volatile alkali, with some other ingredients. In the East Indies, where venomous serpents are numerous, and where their bites are very serious, a remedy of the country, which has been called the *Tanjore* pill, has been found to exercise a very considerable effect; the chief ingredients in these pills has been discovered to be arsenic. Some English practitioners, adopting the hint, have, in consequence, employed arsenic very freely; and, in one of the volumes of the Transactions of the Medico-Chiurgical Society, there is a series of cases, related by a surgeon who had an opportunity of observing several of this kind in the West Indies, where, I suppose, the animal that inflicted the wounds was the yellow or spotted serpent—the "grande vipère fer-de-lance de la Martinique." In these cases he exhibited two drachms of Fowler's solution in the effervescing draught, and repeated it every half half hour for four hours. He has related a number of cases in which he adopted this very bold treatment with good effects. I call it bold treatment, because two drachms of the solution of the liquor arsenicalis, or Fowler's solution, contain, I believe, a grain of the white arsenic, and I think we do not, in general, begin by using the solution in a larger quantity than about five or seven drops to a dose.

A case of the bite of a rattle-snake occurred in this country some years ago. A person who took care of some animals that were carried about for exhibition, was bitten in one or two places by a rattle-snake, which formed part of the exhibition; this individual was taken to St. George's Hospital. His case is related by Sir Everard Home, in a paper in the Philosophical Transactions, I think in about the year 1811. But, according to the result, it would seem that the bite of this animal, was not so venomous as we have been accustomed to suppose it to be; for I think the man lived fourteen or sixteen days after he had received the injury, and, indeed, recovered from its immediate effect, though he died from general inflammation and sloughing of the cellular membrane of the arm, the effect of what might be called phlegmonous erysipelas of the extremity.

Now, in this country, we have not much opportunity of observing the bites of venomous serpents in a dangerous shape, or of putting into practice any of the remedies that have been recommended. The only venomous serpent here, as I have already mentioned, is the viper, and the venomous power of that reptile is so feeble as not, in general, to endanger the life of the human subject. Small animals may be killed by a viper, but its bite does not usually kill a dog; it requires, according to the experiments of Foster, three or four viper-bites to kill a dog, yet I must observe to you, that the swelling of the part, and the disturbance of the nervous, the digestive, and the circulating systems, are very serious in the human subject after the bite of a viper, and, in many instances, when it has taken place in the young subject, it has proved fatal.

Wounds received in Dissection.—Under the division of poisoned wounds, in the syllabus drawn up for this course of lectures, I have attached a query, a note of interrogation, to the subject of "injuries received in dissection?" and I have done so in order to express the doubt which I feel in my own mind, whether injuries of this kind—or rather the effects of such injuries—are owing to the introduction into the human form of a poison or not. It seems to be very doubtful in those cases, whether any thing actually venomous or virulent is introduced, or, whether the results of these injuries must be said to arise from such wounds, considered merely as mechanical wounds. If these be poisonous wounds, the poison certainly follows other laws than those we observe in cases in which we are more intimately acquainted with the poison. If we look at small-pox, cow-pox, scarlet fever, or syphilis, we see that the application of the poison produces pretty surely certain effects, and that these will become apparent within a certain time; that they exhibit a certain character, not difficult to be described before-hand, and you can ascertain, pretty clearly, the symptoms and the course of such injuries. But we can give no such description of injuries that arise from wounds received in dissection. If they arise from a poison, then it is one of a very uncertain, and almost, you might say, capricious kind.

In the first case, in the great majority of instances of wounds received in dissection, no injurious effect is produced. There are hundreds and hundreds of such wounds always occurring without any injurious consequence. It is really only in a very small proportion out of the whole number of wounds that are received, that any prejudicial effects are produced in the human frame. We can, perhaps, quite as well explain the occurrence of these effects, when they do take place, by a reference to the particular state of health of the individual in whom they occur, as by any particular virulent property that might be applied to the wound. Now, it has happened to myself, when I was employed in dissection, as it has happened to many gentlemen present, to cut myself hundreds of times, in dissecting bodies of all kinds—in dissecting bodies that have died under every variety of disease, and I never experienced any ill effect but once, and then I was not in very good health. I had an inflammation of the finger, with swelling up the hand and arm, and, subsequently, swelling of the glands in the axilla, with suppuration. There are cases, however, in which important local effects are produced, and in which very serious, and even dangerous symptoms occur.

It is then, perhaps, rather a question of curiosity than one of direct practical consequence, whether these effects arise from a poisonous matter communicated to the frame, or whether they owe their origin to a particular state of health in the individual at the time the wound is inflicted. In the first place, we cannot point out any particular state of a dead body, or any condition of previous disease, that will certainly give rise to any set of symptoms in these cases. Indeed, we shall observe an individual receive a prick or a cut in the dissection of a certain subject, and suffer certain inconvenience from it; while others, who have dissected the same subject, suffer no injurious consequences at all from a similar injury.

Thus, in the majority of instances, the effects that are produced seem to be merely such as would arise from the infliction of the wounds considered in themselves, without any reference to the state of decomposition of the dissected bodies in which they occur. Inflammation comes on in the seat of the wound; suppuration may take place; the absorbents leading from it become inflamed; the absorbent glands to which they lead may become inflamed; the cellular membrane in which it is seated becomes inflamed, and this spreads throughout the whole limb generally, so that phlegmonous erysipelas is produced. This, in fact, is capable of itself, without the existence, without any suspicion of the existence, of a poisonous cause for its origin, to give rise to very serious local, and equally serious general, symptoms. A great majority of the cases in which those serious local effects arise, admit of explanation, without any suspicion of the existence of a poisonous property as the immediate cause. The cause, therefore, arising from the existence of a poison, must be confined to a few cases where some particular local, and some particular general symptoms are produced. With respect to a great number of the ordinary cases, I think there can be no hesitation whatever in referring the phenomena which they exhibit to the effects of the wounds, considered merely as causes of local inflammation. There was a gentleman, a former pupil of this hospital, who wounded his thumb in sewing up a body; the body of a female who had died of some disease of the peritoneum. I believe he was hardly aware of having injured himself, the prick was so slight. However, in the course of the night after he had received this injury, he felt a very severe pain in the part. He might but have scarified the part a little, and received some slight wound; however, he felt extremely unwell, and when he awoke in the morning, he sent for a medical friend, who found him in a state of great excitement. He was a robust and hearty person, of a full habit. His friend found him with a full, hard, and strong pulse, with considerable swelling about the part where the injury had been received, and that swelling extending to the fore-arm and arm. He was so extremely restless, and his nervous system was so much disturbed, that he could hardly keep himself quiet. He was in a state, in fact, which called immediately for pretty active depletion, which was resorted to, and he lost about thirty ounces of blood, I believe, with considerable relief. He was better the next day, but still the upper extremity generally was swelled; the absorbents leading from the thumb along the fore-arm and the absorbent glands in the axilla became inflamed; he had pain in the head, and the nervous symptoms continued. Leeches and cold were applied to the head, and purgative medicines were administered. On the following day all the symptoms were worse; the limb was more swelled; the inflammation of the absorbents and of the absorbent glands more obvious; all the symptoms were more serious, and on this day I saw him. He fancied, from the swelling of the ball of the thumb where the injury had been received, that there must be matter there, and he very strongly urged the necessity of opening it to let out the matter. Although no matter was felt, a pretty deep incision was made into it, and a small drop of matter did actually flow out. A poultice was applied to the part, and he was greatly relieved. The puncture was made very deep, and when the limb was enveloped in the poultice, he lost about thirty or forty ounces of blood without being aware of it. There seemed to be a considerable artery cut, and he was the better for it. However, the swelling of the fore-arm and arm went on, and in the course of the day on which the incision was made, and between that and the following day, in consequence of the urgency of the symptoms, he lost blood from the arm twice, and had an enormous quantity of leeches applied to the head, the arm, and fore-arm. Indeed the only relief he experienced was from the application of the leeches, and these he applied without counting them, merely taking a handful and laying them on, and after their removal laying on another handful, so that, in the space of four-and-twenty hours, there were about a couple of hundred leeches applied to the upper extremity. By these means the inflammatory action was pretty considerably reduced, and after the lapse of three or four days, he found himself exceedingly altered. At that time, and while he had a gentleman attending him almost constantly, (Dr. Gordon, of Finsbury Square), a particular change took place. He became pallid in the countenance, cold in the extremities, and the action of the heart was so enfeebled that he appeared as though he were about to die. The limb became feeble and cold, and, under these symptoms, Dr. Gordon gave him a large quantity of opium, which relieved him; he continued exhibiting opium until the symptoms were removed, and, in this way, under the employment of opium, he gradually recovered. Now, I can here see nothing more than the effect of local irritation, the production of very high inflammatory action in the constitution of an individual whose habit disposed him to it, while the effect of depletion, in controlling that disturbance, is made very apparent; so that in a case of this kind, I conceive there can be no reason for calling in the aid of a poison to account for the effects I have detailed. We do not require the action of poison at all to explain the symptoms in this case.

There are some other cases in which the local and general symptoms have been rather different; and it is in those particularly, that the agency of poison has been regarded as the true cause. There was a physician who lived in the neighbourhood of London, who examined a lady that had died of puerperal peritonitis at eight o'clock in the morning of the 28th of December. He assisted in sowing up the body, and was not aware that he had injured himself; he did not know that he had even pricked himself. At eight in the evening of the same day, being then dining out in company with a friend, he felt some heat and uneasiness in the end of one of his fingers, and he then thought he must have injured himself. On looking at the finger, a slight blush was observed upon it, and when the part was more particularly examined, a minute opening in the centre of that blush was observed, so that the inference was that he had pricked that part in sewing up the body. He had it touched with the nitrate of silver, and also with a small quantity of the nitric acid, those applications being at hand. Now, these remedies were unattended with pain. He went home, and finding the finger still uneasy, as the former applications had given him no pain, he again applied the nitrate of silver, continuing the application till he felt it sensibly, and then the pain thus produced increased to a degree of agony. Shiverings came on, and he passed a terribly restless night. When he was seen early in the morning, red lines were observed extending along the back of the hand. At eight in the morning of the 29th, the eschar was observed to be about the size of a split pea, which of course was supposed to arise from the application of the nitrate of silver. Leeches were directed to be applied, and fomentations, poultices, and aperient medicines ordered. About one o'clock on the same day, that is, on the day after that on which he had opened the body, the finger appeared swollen, and put on a livid appearance, the pain being very considerable. The medical friend who saw him, made an incision through the integument down to the bone, and by so doing, found that the two last joints of the finger had mortified. No blood flowed, nor was pain experienced. The last phalanx and the middle phalanx of the finger were already in a state of gangrene; red lines were observed extending along the forearm up to the ulna, and uneasiness was felt in the axilla. At this time he experienced a complete prostration of strength, and felt himself as weak as a child. There was an irregularity in the breathing, considerable torpor, and the pulse from 90 to 100, and soft. During the rest of the day, he had much of a heavy kind of sleep, with intervals of severe pain. The hand and arm swelled now very considerably; the absorbents inflamed along the arm, and the axillary glands also became affected. A greater degree of torpor and depression supervened, with difficulty of breathing, accompanied by an erysipelatous blush in the axilla, and about the side of the chest. An opening was made in those situations without giving vent to any matter, and the gentleman died at six o'clock of the morning of the 1st of January, the fourth day after sewing up the body. Now, in this case there certainly was a remarkable effect produced very rapidly; a chain of serious effects on the animal economy, by which, in the space of four days, death was produced in an individual previously healthy. A gentleman, who was a few years ago a dresser at this hospital, an individual not very exemplary in his mode of living, being apt to indulge in the pleasures of the table, and not quite a pattern of regularity, opened a body, in the course of which he slightly pricked himself in one of his fingers. It happened, that on the day on which this occurred, he had a large party of friends at his house, and that he drank very freely. In the course of the night he was awoke with excessive pain in the finger, and before the middle of the following day, the last phalanx of his finger had mortified. Swelling of the finger, of part of the hand, and of the limb generally, inflammation of the absorbents, and of the absorbent glands, took place, and thus considerable fever, combined with phlegmonous inflammation of the hand, fore-arm, and arm, occurred, and the patient was in a state of the greatest danger. However, by making large incisions through the skin and cellular membrane, he recovered.

Now it is to be observed, in the first of the cases I have mentioned, that of the physician who examined the body of the lady, and who died in four days afterwards, and in many other of the most serious cases that are recorded, the injury had been received in the examination of patients who had died of inflammation of the peritoneum, and more particularly of puerperal peritonitis; so that if there be any poisonous influence capable of being communicated to the body, it would seem to be more especially from the bodies of individuals who have died of this kind of disease. In the cases of these two individuals, however, we have instances in which, on the one hand, mortification took place at a very early period, and was soon followed by death; and, on the other, of mortification followed by recovery.

Now, so far as the mere occurrence of mortification, consequent on an injury, goes, I do not deem it to be a sufficient proof of the operation of any poison. I remember very well a butcher's boy being brought into this hospital and placed under my care, whose hand had been pierced by a hook, which had torn away a large triangular flap in the palm of the hand. It had not merely torn the skin, but both the skin and cellular membrane, making a flap which one would have expected to unite very well to the subcutaneous parts; yet, in that case, the flap mortified, though the wound was produced merely by a hook; so that the mere mortification does not prove that any poisonous influence has been excited, nor does it appear to me that the general symptoms of these cases are such as to induce a belief in such influence. We merely observe in them such sympathetic influence upon the circulating and nervous systems as may be produced by a serious local injury, without the presence of any poison whatever, but which, occurring under particular states of health, is such, that in one case it terminates in recovery, and in another is fatal. I am still in doubt, therefore, whether there is any poison communicated in cases of injuries received in dissection.

Malignant Pustules.—I am aware that animal substances in certain states of decomposition, are capable of producing a directly deleterious influence on the human frame. I have already had occasion to mention, in speaking of mortification and diseases of that kind, such disturbances as malignant pustule, where mortification of the surface takes place. This is a kind of effect not so often seen in this country as in some others, where it is observed among the butchers, who have the flaying and cutting up of animals in a putrid state, which exerts this influence often to a fatal degree. That particular effect is described more minutely by Professor Delpech, in a work entitled "Treatment of Surgical Diseases." We have not much opportunity of seeing it in this country, but in those instances there is a certain form the disease takes—a particular course which points out the operation of certain and peculiar causes; but we do not see this regularity in those serious occurrences which occasionally arise from dissection.

Treatment.—Now, with respect to the treatment of injuries that are received in dissection, some persons adopt the plan of touching the wound with the nitrate of silver, and I should suppose that that is a safe and a good mode of proceeding. There can be no doubt that if you expose the wound, thoroughly wash it, and touch it with the nitrate of silver, you would be likely to prevent any ill consequence likely to arise from it. Some have recommended that it should be washed with the oil of turpentine, which would have nearly the same result. These are means of a preventive kind.

Now, if any inflammation should come on, I conceive it will be necessary to keep the part in which the wound has been received, at perfect rest; to foment or to poultice it, to apply soothing applications. If there were symptoms of decided inflammation proceeding, then it would be necessary to take blood from the part by leeches; to take medicines for the purpose of evacuating the alimentary canal; and to adopt such measures of this kind as might be necessary until the danger is past. If still more considerable inflammation should have come on, and, if matter should have formed, then I should think it advisable to open the part freely. In cases in which inflammation, swelling, and any thing like the formation of matter, occurs at a distance from the seat of injury, that is, for example, in cases of wounds in the fingers or hand, when redness and uneasiness occurs about the axilla or chest, if any thing like the formation of matter should be observed there, I think the best course of proceeding would be freely to open the part. The danger in this case is of inflammation arising and proceeding in the cellular membrane of such parts; and, when it does so proceed, we know very well that there is a want of disposition in the parts to limit the inflammation; that such inflammation is apt to creep on and involve them to a considerable extent; that the matter does not tend to approach the surface, and, therefore, that a free incision into the part is, according to experience, a most advantageous mode of treatment.

As to the constitutional disturbances that may ensue in conjunction with these local symptoms, generally speaking, they are altogether of an inflammatory kind, and should be treated by the antiphlogistic means according to the extent of disturbance. I confess I do not regard those cases with any thing like feelings of alarm; because, in the great majority of instances, if proper attention be paid to them, they terminate favourably. I do not conceive, therefore, that, generally speaking, they should create alarm or be viewed with apprehension. I acknowledge that I am rather inclined to discharge the idea that these wounds are of a poisonous nature, because I conceive its prevalence likely to give rise to much unnecessary alarm. I do not, however, argue against the supposition merely on this ground, but I give you my real and serious opinion upon the subject, free from any notion of that kind; I am glad to be able conscientiously to arrive at the conclusion I have come to, that your anatomical studies need not be prosecuted with dread.

I should also say that there is not the fear of communicating the peculiar disease to yourselves, in dissections, of which the persons may have died.

Although the venereal disease is capable of being communicated during life, we do not know of its having the power of being communicated from the dead subject to the living. Neither in cancer, fungus hæmatodes, nor in any similar case, have we any instance of disease of the same kind being communicated to the human body through the medium of a wound inflicted in dissecting the parts after death.

I have mentioned to you, that I have only once suffered inconvenience from a wound inflicted while dissecting, and that was in opening a person who had died of cancer in the stomach. In that case it happened, as it does in many others, that the body was opened very recently after death; it was scarcely cold. The man died of the most formidable affection of the stomach, namely, cancer; I wounded my fore-finger whilst sewing up the body, and very considerable swelling of the glands of the axilla, with induration and suppuration, came on. One of my medical friends who was kind enough to visit me, made, I observed, a very long face when he saw the case, aud he conceived, as I afterwards found, that the glands in the axilla had taken on a scirrhous character, which partook of the same affection as existed in the stomach of the body I had examined. He mentioned this to another gentleman who was visiting me, with strict injunctions not to let me know of it, for fear of its alarming me; however, those injunctions were not attended to, and we had a good laugh over it, because I was not in the slightest degree alarmed. I may state, that in examining patients who have died from fungus hæmatodes, scirrhus, or the venereal disease, I do not know of any poisonous principle communicated to wounds received on such occasions. There may, however, perhaps, be some exceptions to this general observation. There are some instances recorded, of individuals who have received wounds, either in the examination of animals dying under particular states of disease, or in administering during life to these animals: for instance, to glandered horses. There are instances of individuals who have received wounds upon their hands, under such circumstances, in whom a particular train of symptoms has arisen, one circumstance of which has been the formation of abscesses upon various parts of the body. It has been found that the matter of such an abscess has been capable of communicating to other animals—that is, to horses, or asses, the glanders; so that there may be instances of particular poisonous wounds communicating peculiar poisonous effects to the human frame.

LECTURE XXI.

Specific Diseases.—Scrofula and its Treatment.

Specific Diseases.—I proceed, gentlemen, in the next place, to speak to you of specific diseases.

Scrofula.—We employ the term scrofula in two senses; first, to designate an assemblage of characters which denote a certain class of disease, comprehended under the term scrofulous disease; and, secondly, to denote that peculiarity of constitution which is generally original or connate, that is, existing at the time of birth. In this sense the word scrofula is used synonymously with the term scrofulous constitution, and it is this we allude to when speaking of scrofula existing in a family.

The word scrofula is said to be derived from *scrofa*, which is the Latin for sow, though we cannot see any particular reason why the term applied to this particular class of disease should have been derived from such a source.

The term struma is equivalent to scrofula; the two are used indifferently; and, in popular language, these diseases are denominated "king's evil," or simply the evil, from an opinion formerly prevalent, and, indeed, not very long obsolete, that the touch of a royal personage would cure it.

We cannot draw a very marked line of distinction between common and scrofulous disease. There is an insensible transition from the one to the other, as in all other cases of disease. The forms of disease are the same in each; the difference is in certain modifications. Scrofulous inflammation is less active and less rapid in its progress than common inflammation. The characters of scrofulous inflammation are less marked; the firm swelling, the bright-red colour, and the acute pain, which belong to phlegmonous, are wanting in scrofulous inflammation; neither does the latter exert such powerful sympathetic influences as we observe excited in the phlegmonous inflammation. Yet, in subjects that appear to be scrofulous, we often find inflammation existing, with all its characters pretty strongly marked; in fact, we see cases which, so far as the redness and swelling go, we should be inclined to call cases of common inflammation. But when suppuration occurs in scrofulous inflammation, the matter does not so readily and quickly make its way to the surface. We do not find the collection of matter pointing, on its arrival at the surface, as in phlegmonous inflammation. We find that the skin becomes extensively detached in the situation where the matter approaches the surface; that it is rendered very thin, and, finally, that a small opening takes place in that thin part. But the matter which is discharged from this opening is very different from that which is produced in phlegmonous inflammation. It is rather a mucous than a purulent fluid; at least it is very thin, and is very commonly flaky and curdy; the flakes are mixed with the thin fluid. Indeed, these collections of fluid generally bear the character more of chronic abscess than acute, and evince the slowness and tardiness in reaching the surface that characterise abscesses of that kind. Scrofulous inflammation seldom terminates in mortification; indeed, I fancy it never does so, simply by the violence of inflammatory action; for scrofulous inflammation, when decidedly marked as such, does not seem to permit of that high degree of local action which is necessary for such a purpose ; yet, in parts that are affected with scrofula, we sometimes see a portion of them deficient of vitality, and converted into a fibrous dense kind of substance, which separates much in the same way as a slough does from other parts: it is a kind of loss of vitality taking place in scrofula peculiar to that form and manner of disease. Chronic inflammation is a very frequent form of disease in scrofulous subjects. In scrofulous inflammation there is little redness of the part, sometimes none, but considerable increase in its size. The bulk of the part is augmented often with very little injury to the functions of the organs; and an increase in size goes on for a considerable length of time, without producing any such change as is seriously inconvenient to the patient.

When scrofula attacks the internal organs, those of a glandular structure, and others, it frequently forms small swellings called tubercles. Tuber means swelling, and tubercle is the derivative of tuber, meaning a little swelling. These tubercles consist of small masses disseminated throughout the part affected; they increase in size ; those which are contiguous join, coalesce, and assume a greyish colour; they become softened and loosened in texture, and then a kind of suppuration takes place, that is, the tubercular matter is loosened and comes away, and a peculiar suppuration takes place in the part; the tubercular matter becomes detached, and in this way an extensive disease goes on. This is most commonly seen in the lungs; and we often find that nearly the whole of those organs become destroyed in consequence of this peculiar change. But such tubercular degenerations are seen in other viscera—the liver, the brain, and sometimes the spleen: and, indeed, in all the internal organs.

Scrofulous ulceration is a languid and inactive process, with a thin, and, generally, sparing discharge. The surface of the sore is pale or livid, and there is no appearance of granulation, nor any production of substance to fill up the ulcerated chasm. The margin of the sore may be smooth, red, or livid. Sometimes the basis and the edges of the sore are raised; in fact, there is an increased deposition in the part, but it is not of that healthy kind which leads to the restorative process. Such ulcerations take place either in scrofulous abscess, or, independently of it, in every part of the skin.

The parts which are most subject to scrofulous disease, are, in the first place, the absorbent glands, more particularly those of the neck and of the mesentery. The absorbent glands of the groin are much more rarely affected, and those of the axilla are seldom observed to be the seat of scrofulous disease.

One of the principal exciting causes to scrofulous disease, is exposure to cold; and you will easily see from that, why the glands of the neck are so frequently the seat of the attack; but yet this does not explain how those of the mesentery become affected, because these, as we all know, are kept warm enough. The truth is, that the mucous membrane of the intestines is very commonly disordered in such cases, and the disease of the absorbent gland is consequent. Indeed, it will frequently happen, that the affection of the glands is secondary in scrofula, as well as in other cases of disease, and although they may appear to us to be affected primarily, yet if we come to examine them narrowly, we shall find the affection of the glands to be decidedly in consequence of disease in some parts from which their vessels are derived. Other parts, after the absorbent glands are affected, come to be frequently the seat of scrofulous disease: the lips, the eye-lids, the mammary gland of the female, the cuticle. The mucous membranes of the body are very subject to its attacks. Those of the eye and nostrils are particularly so. They are exposed and open to the external causes which produce it. The lining membranes of the respiratory and digestive organs are also frequently the seat of disease in scrofulous subjects. The mucous membranes of the urinary passages are not liable to the same external cause, and we do not find that they suffer. The skin, in its morbid affections, shows a close affinity to the mucous membrane, and thus the skin suffers very much with the mucous membranes; indeed, I need not observe, that it is extremely exposed to the exciting cause of scrofula. The lungs are subject to it, and consumption is merely a form of scrofula. The bones and joints are likewise subject to it. These are the parts of the frame that are more particularly liable to the effects of scrofula.

Now, fortunately for the human race, the liability to scrofula does not exist equally throughout the whole of life. It is confined pretty much to the period of growth, or rather to that portion of life which intervenes between the termination of suckling and puberty. In many individuals, the whole of this period is occupied by a succession of attacks of scrofulous disease in the absorbent glands, the skin and the joints, and very often it exists in several of these parts at one and the same time. In individuals who have had scrofula in these various shapes, extending over the whole of the body, and who have been for several years the subjects of the most serious forms of the disease up to the time of puberty, it is by no means uncommon to find the attacks then decline, and that when the changes take place that are usual about the commencement of manhood, the individuals become healthy and vigorous. At the time, however, that this particular change takes place, and the succession of disease in the eyes, glands, ears, joints, and skin, is stopped, it not uncommonly happens that the disease is developed in other more important parts, that is, either in the lungs, the mammary glands, or the testicle.

Predisposing Cause.—The great predisposing cause of scrofula, is original peculiarity of constitution. We can have no hesitation in stating this fact generally; but we should find it rather more difficult to point out precisely in what that peculiarity of constitution consists.

I have already had occasion to observe to you, that each individual has something peculiar to himself in his bodily organisation; that there are infinite varieties of natural organisations in the human species; and in individuals who are distinguished by some of them, there is a greater or less degree of susceptibility to particular forms of disease.

The external marks of scrofula are generally considered to be a thin state of the integuments, so that the cutaneous veins are easily seen ramifying under them. In some individuals the skin is so thin, that the course of the superficial veins, and the colour of the blood they contain, are almost as distinct to the eye as if the subject were dissected. A thickness of the upper lip, and a tumid state of the septum of the nose; a looseness and flaccidity of the muscular system; these are circumstances observed in individuals disposed to scrofula; but we cannot say from which particular state of the frame, the liability to the several species of scrofula can be derived. We observe two kinds of constitutional marks in scrofulous subjects. One class of individuals presents a pale and pallid countenance, generally rather a tumid abdomen, a flaccid loose state of the muscles of the body, and the want of activity in the circulation, so that the extremities are cold; and the individual suffers much from this condition; there is a languor, in fact, both of body and mind. In the other class there is rather an excess, an unnatural quantity of colour in the face, and in the cheek particularly. There is rather an excited circulation, and that is easily still more excited. There is a rapidity in the operation of both mental and corporeal powers; and the intellectual powers of children so affected, often appear to be prematurely developed; external influences, in fact, act more powerfully on these than on other individuals. Now, both these classes of persons are called scrofulous; and they exhibit the particular characters, more or less, to which the word scrofula is applicable; and yet the individuals are very different from each other, and, of course, there is a difference in the progress of disease in each, and there must be a different mode of treatment for its removal.

Direct or exciting Causes.—Of the direct or exciting causes, cold is the most common, particularly when combined with moisture. Hence considerable vicissitudes of temperature are favourable to the occurrence of scrofulous disease, and, consesequently, scrofulous disease is most common in the cold regions of the globe—in countries where the atmosphere is damp and cold, and where there are frequent changes in its condition. Great Britain, the northern parts of Germany and France, are countries in which it is very common indeed. But the occurrence and frequency of scrofula ars not confined merely to the situations I have just mentioned. Professor Beere, who practised at Vienna, a situation considerably to the south of the above countries, states, that of ophthalmic cases occurring in Vienna, nine out of ten are generally strumous; and Breschet says, that, according to his experience, the frequency of strumous ophthalmia is still greater. I have been informed that the late Dr. Gregory, of Edinburgh, used to state in his lectures, that he believed there was not a member of a family in Scotland, but was disposed to scrofula; and the present Dr. John Thomson, in his lectures, says, it is almost rare to meet with an individual who has not, in some part of his life, experienced disease in some of the forms of scrofula. Now, if these statements be correct, scrofula must be the most common disease we have to treat; although, in warm countries, it is less frequent than in the climates I have just mentioned, yet they are by no means exempt from it, because cold is only one exciting cause; there are several others, and the inhabitants of the warmer regions may be exposed to some of them; but still, warmer countries seem to be particularly favourable to the prevention of scrofulous disease. It happens that the natives of warm climates suffer very much from disease, in all respects like scrofula, when they come into the colder countries. Now, negroes, when they come here, often fall victims to disease, which we cannot distinguish from scrofula; and, I may observe, the same has been noticed in certain animals, which are considered by some philosophers as half brothers of negroes—I mean monkies. These are all inhabitants of the warmer countries; and when they come to pass a winter or two here, they suffer seriously from disease, and, generally speaking, if we examine them after death, we find disease corresponding very much with what we find in the human subject, when there is deposition of tubercular substance throughout the various organs; and, in many of the cases I have seen, there is disease of the bones very like scrofulous affections in the human subject. For the same reason we find that scrofulous patients suffer more at one season of the year than at another; their complaints are aggravated in the winter and in the spring; they are better in the summer and autumn.

The next in order among the exciting causes of scrofula, is insufficient or unwholesome food; excess or irregularity of diet. These tend to disorder the mucous membrane of the alimentary canal, which is easily affected in scrofulous subjects. We cannot be surprised at this, if we consider that theirs is naturally a defective constitution. If the organ in which the nutriment of the body is prepared be attacked, can we wonder at the various forms in which the disease shows itself in the frame? The disposition to this disease is, no doubt, aggravated by sedentary habits. It very often happens that parents are anxious that their children should commence their studies early; that they should begin to employ their time at books, and give their attention to learning while very young; and thus the children are led to devote a portion of time to sedentary pursuits, which, from their natural buoyancy of spirit, they would occupy in another way, and in a manner which I believe would be much more to the advantage both of their minds and bodies.

These causes—that is, cold and bad diet, or excess of diet, the neglect of exercise, and sedentary habits—produce states of the frame in which irregularity of the functions of the alimentary canal, a want of circulation in the capillary system, and a want of full development of the muscular powers, are very much marked; and such are the leading characteristics of subjects of scrofulous disease, disorder of the digestive organs, a pallid state of the skin, and a loose and flaccid condition of the muscles of the body.

When several exciting causes of scrofula act in conjunction, and with considerable activity, they are capable of producing a state of frame which we cannot distinguish from that which attaches to other individuals from birth. Thus, in those subjects in whom nothing of the kind has occurred, a sort of acquired scrofula may be superinduced. In this way the crowded dwellings of the poor, the confined situations in which they live, their deficient and unwholesome diet, their insufficient clothing, their want of necessary warmth, and the absence of various comforts requisite during the winter season, bring on, in the children of the poor, a state of disorder in the digestive, cutaneous, and muscular systems, which cannot, in any way, be distinguished from that of persons born with scrofula.

An opinion has been very generally entertained, by professional men, that debility is the cause of scrofula—that it is the source of the various sufferings to which scrofulous individuals are subject. Hence it has been too often the case, that when scrofulous disease, or disease supposed to be scrofulous, is seen, the patient is directed to use tonic medicines, and to take animal food and fermented liquors; and with many persons the idea prevails, that the more both tonic medicines and stimulating articles of food and drink can be taken, the better it is for the individual, the more likely is it that the disease will be removed; I cannot, for my own part, conceive any opinion more erroneous. We should be much nearer the truth if we were to say that scrofulous patients ought to take no tonics or stimulating diet at all, and that they should abstain entirely from the sort of diet I have just mentioned. I do not mean to lay this down as a rule, but to say that this would be a much more rational and safe plan.

The state of a scrofulous subject is certainly, in one point of view, a state of debility. Scrofulous subjects are not capable of doing many of those things which are accomplished by healthy individuals, and, so far, they may be said to be weak; but you are to consider that the functions of scrofulous subjects are more easily excited; they will bear the influence of external agencies less than healthy individuals. How can you expect, therefore, that great quantities of bark and other tonic medicines can be taken into the stomach and alimentary canal with advantage? How can you suppose that the patient can bear large quantities of animal food and fermented liquors? The notion, in my opinion, is altogether unreasonable. Unquestionably, the regulation of diet, and the selection of the articles that are to constitute the food, are circumstances of great consequence in the treatment of scrofulous individuals. The diet should be of a nutritious, but not of a stimulating or exciting kind. A mixed diet of animal and vegetable food has been found, by the experience of all ages, and all countries, to be the best suited to the human organization. I see no reason whatever, therefore, for prohibiting scrofulous subjects from taking vegetable aliment; a moderate portion of the lighter kinds of animal food, taken once a-day, and the mixture of it with well dressed vegetables, bread and milk, farinaceous articles, and ripe fruits, these are the kinds of articles that should form the diet of scrofulous individuals. Certainly in many instances, particularly those of the excitable kind of scrofulous subjects, animal food can hardly be borne every day. There are many such individuals to whom we should only allow meat every second day, and their diet on other days should consist of bread and milk, and other farinaceous articles, and well dressed vegetables and fruits. The quantity of food, of course, must be carefully attended to. Children are not able to determine this point for themselves; indeed, grown-up persons do not judge with the greatest possible propriety on that point. The time of taking food must also be attended to. In younger children, perhaps, food might be allowed four times a-day, but in those a little older, it is sufficient to allow food three times a-day, nothing being taken in the intervals between the meals.

Medical Treatment.—In respect to medical treatment, we shall find that in general there is a disturbed state of the alimentary canal, and that frequently some part of the canal is loaded with aliment or unhealthy secretions. Our first object, therefore, is to clear it from such accumulations, and afterwards to employ such means as will strengthen it in the execution of its regular performance.

Now because a patient is said to be scrofulous, and scrofulous subjects are said to be weak, you are not to suppose that in such a state of the alimentary canal very mild aperients will suffice. It is often requisite to employ very active and powerful means, and even in young subjects too. This is not invariably, but frequently the case, and you will find it is particularly so if there be a foul state of the tongue, and a bad and unnatural state of the breath, indicative of the condition of the alimentary canal, and more especially if with these you find a tumid state of the abdomen. Then you administer calomel with rhubarb, jalap, scammony, or colocynth, or calomel with antimony, to be followed up with the usual senna draught, or a dose of castor oil; and you should repeat these, continuing them till you have cleared out the bowels completely; after this, milder medicines for a continuance will answer the purpose; a grain of calomel, or a few grains of the mercury and chalk may be given twice a week, with other medicines at different periods; rhubarb, sulphate of magnesia, and potash. The compound decoction of aloes is very good in such cases, given in the middle of the day, or a little before dinner. The object of administering these medicines after you have once cleared out the alimentary canal, is to insure a regular state of the bowels; not to purge them, but to see that the residue of the matter taken into the stomach is regularly expelled, which does not require very active means. Then in certain circumstances it may be expedient to give tonic medicines, and these, if the tongue be clean, you may safely administer. If you have cleared the alimentary canal, and got a clean state of the tongue, and the patient be pallid and feeble; if the skin is cold, and there is a defective circulation in reference to the surface, you may administer tonic medicines—perhaps steel and mineral acids. The best of these tonics is infusion of Cascarilla with dilute nitric acid; or sulphuric acid may be given, in the infusion of roses. Ammoniated tincture of iron, bark, columba, and gentian, are tonics that are frequently given under such circumstances. Great confidence has been heretofore reposed in bark, in the treatment of scrofulous subjects; but I believe it possesses nothing particular in its powers: it is capable of doing nothing that may not be affected by other medicines. With these tonics, mild aperients may be associated. Rhubarb may be advantageously joined with carbonate of iron. If there be acidity, it may be advantageous to give alkalies, in conjunction with bitter tonics. It would seem that the principles of modern practice, even in ordinary cases, are not clearly established. Alkalies have enjoyed great reputation in the treatment of scrofula: the hydriodate of potash, and the hydrochlorate of lime, have been used; subsequently, carbonate of ammonia;—all these have been regarded as specifics, and a combination of them with tonics has been employed. Other persons have wisely considered that a medium between the two extremes of the exhibition of acids and alkalies in scrofula, is the most desirable mode of proceeding. Having mentioned these opposite opinions generally, I may refer to my own experience; and probably the truth is, that neither the acids nor the alkalies are of great importance in such cases: the successful treatment may not depend upon the administration of either of these remedies.

An opinion has often prevailed that mercury ought not to be given to patients affected with scrofula; that a great danger exists of aggravating the affection—of rendering it more obstinate. But I think we certainly cannot dispense with mercury, regarding it as a purgative. We often find it most beneficial for clearing out the alimentary canal, and as a mild and alterative medicine to be given afterwards. I may go further, and state that in some forms of scrofulous disease, where it is active, and proceeding to a change of structure of the part which it affects, (and I would allude particularly to strumous inflammation affecting the cornea of the eye,—where deposition takes place into the cornea,) it is often of great advantage to carry the use of mercury so far as to affect the system; that by these means we have the power of controlling the inflammation, and bringing it to an end, of bringing it to a termination without destruction of the part. And we do this without any danger, as far as I have seen, of injury of any kind; so that I am inclined to think the notion, which has been pretty extensively spread, of the peculiarly unfavourable influence of mercury in scrofulous individuals, is by no means well founded. When mercury is given in the way I have mentioned, we may employ calomel with James's powder, or Dover's powder, or give the hydrarg. cum creta. Sometimes the oxymuriate of mercury may be given with the tincture of bark. A grain of the oxymuriate may be mixed with an ounce of the tincture of bark, and a tea-spoonful may be taken three times a-day; that will be about an eighth of a grain three times a-day. The state of the skin is a point of particular importance in scrofulous subjects. We very commonly find a dry, harsh, and pallid state of the skin; a state of the skin where there is a defect in the capillary circulation; where the blood which is sent to the minute vessels remains there. When we consider the great extent of the skin, the importance of its secretion, the quantity of matter that is daily separated from the body through it, we cannot but suppose that the condition of the skin must have a very great effect on the health; and, certainly, in scrofulous subjects, we find it in a condition very far from one of health. Under these circumstances the warm-bath is very useful. Where this cannot be employed, washing the skin over with warm water, and rubbing it well, will be of service. The individuals in whom such a state of skin exists should be warmly clothed. It is a very mistaken notion to suppose that the kind of weakness which exists in scrofulous subjects can be remedied by hardening them, as it is termed—that is, by allowing them to be exposed to cold and vicissitudes of temperature. The animal powers are defective in those systems, and therefore they require every assistance to the due discharge of their functions. They are not capable of encountering vicissitudes of weather, and therefore they should not be exposed to them. It is always desirable that they should have exercise, and therefore I by no means wish they should be kept at home, or within doors, because it is cold; they should be allowed to go out and take exercise, care being taken that they are so clothed as to prevent their taking cold. It is found in animals that the power of generating heat is much less in those that are young than in adults. A proof of the advantage which individuals derive from a warm temperature and a proper supply of nutriment peculiarly adapted to the purposes of the animal economy, may be, I think, found in the fact that children, during the period of suckling, do not suffer from scrofula. At that time the child is carefully clothed; it is near the persons of the mother or nurse, and participates, in a measure, in the warmth enjoyed by them, suffering very little from cold, and receiving a regular supply of healthy nutriment. Thus the two great causes, exposure to cold, and unwholesome nutriment, are precluded in the case of children during the period of suckling.

I have said that exercise should be regularly taken. If you leave children to themselves, they will naturally engage in a variety of active pursuits by which their muscular system is sufficiently exercised; and I think, if any thing like a tendency to scrofulous disease is shown, parents ought to consider the object of education as quite secondary to that of establishing the health; and nothing like attention to books should be allowed to interfere with attention to the rules which are calculated to restore and secure health. These, then, are the general points of management in the cure of strumous individuals. You observe that all these may be called general rules. In fact, in the great majority of cases of scrofulous disease, the means that are destined to obviate the cause of the disease should be of a general nature. However, of course we frequently have occasion to employ local measures in conjunction with general, although they may, perhaps, very often be regarded as secondary in point of importance. In the case of simple chronic swelling, without any very active inflammation, it may be sufficient to employ the general means I have mentioned. At all times the part may be kept warm; it may be covered with a soap plaster. When a more active degree of inflammation exists, if there be some heat and pain, you may employ mild antiphlogistic means, according to the degree of inflammation. You might apply a few leeches; you might apply an evaporating wash, or you might apply a poultice made either of bread and water or of linseed.

When suppuration takes place it is necessary to open the abscess pretty quickly. You should make a rule of this, because there is a want of inclination in the suppurative matter to come to the surface. It will extend in circumference, and the deformity which frequently results from scrofulous abscess will be increased. If you leave it to itself the skin often becomes excessively thin; and when the swelling forms matter, considerable part of the skin must ulcerate, for it is so far deprived of life that it cannot remain attached to the parts belonging to it. You will obviate all this, then, by opening the part pretty early. The languid and unhealthy kind of ulcer which frequently takes place in the skin, or follows this abscess, very often requires local stimuli or astringents. This is not by any means a general rule, because, under many circumstances, scrofulous ulcerations do very well under the employment of simple local means, such as bread-and-water poultice, spermaceti ointment, or some other simple dressing. But when the surface of the sore is red, when these signs of deficiency of power are observed, you may touch the surface of the sore with a solution of the nitrate of silver, or of the sulphate of zinc, or of some local stimulus, in proportion to the want of active vitality.

In chronic scrofulous inflammation, you often find it necessary to have recourse, in the first place, to a mild antiphlogistic treatment, and afterwards to means of greater irritation; to blisters, to setons, or to issues; or, by way of producing irrition, to rubbing tartarised antimony on the skin. The mention of this latter medicine leads me to remark to you, that you may, in many cases, observe how scrofulous disease imitates the process which nature employs; you will often find that scrofulous disease ceases in one situation, and makes its appearance in a neighbouring part; for example, a patient with strumous ophtbalmia, and suffering very much from it, will have an eruption and discharge take place from the skin, behind the ears, for instance, and then the eyes will get quite well, and so the disease will shift from one part to another. Now, following up the hint, you will find that the use of tartarised antimony, rubbed on the skin, may be very advantageously employed to produce a disease that will supersede one which exists in another part, and that it is a powerful means of removing strumous ophthalmia. I have heard that persons, in the course of their practice, have employed it still more extensively than in the degree to which I allude. For example, for affections of the glands of the neck, they produce an eruption by rubbing tartar emetic on the arms; and in case of its appearing lower on the body, they use it so as to produce a copious eruption on the thighs. This is an imitation of the process which nature herself employs in the cure of these affections.

LECTURE XXII.

Treatment of Scrofula continued.—Gout—Rheumatism.

I SPOKE to you, gentlemen, in the last lecture, of the employment of tonics in the treatment of scrofula; I mentioned to you the reason why I considered the use of them objectionable generally; but I stated, that under certain circumstances they were allowable, and even advantageous. I might have added, that, in a great number of scrofulous subjects, tonics are altogether inadmissible. There are many individuals labouring under affections of this kind who will not bear them in any shape, who seem to be rendered worse by the use of tonics in whatever form, or under whatever circumstances they may be employed.

I should have spoken to you, in the last lecture, of the importance, in cases of scrofula, of residence in pure air; in fact, this alone, in many cases, is capable of doing more towards improving that state of system on which scrofulous disease depends, than any thing we can do either by external applications or internal remedies. It is vain, in many cases, to attempt to benefit disease of this kind while patients remain in large towns and crowded dwellings, and in confined situations. It is often the case, that as soon as they quit these, and get into pure country air, the disease we have ineffectually been attempting to cure will get well of itself. This is more particularly seen in the inhabitants of large towns when they are removed to the sea-side; and it is a correct popular notion, that the sea air is of very great advantage in the treatment of this complaint. It cannot be supposed that the air of the sea side has any specific effect on the disease; scrofula will exist in patients who have always resided there. Nevertheless, the advantage of the change, more particularly to those who have lived in large towns, from the bracing effects of the sea air, is very manifest. The effect of the change is so great, that many cases of the worst forms of scrofulous disease experience a marked alteration, indeed get well rapidly, without the administration of any external or internal remedies. There is an infirmary established, at Margate, I think, for the reception of scrofulous subjects; it is open during a part of the summer, that the poor may partake of its benefits; and I believe the practice of the institution is to apply nothing but cloths, dipped in salt-water. But we cannot ascribe any great virtue to this. I have, sometimes, been surprised to find persons, and even medical men, inclined to question the advantage of pure air, either in scrofulous or other diseases. The point seems to me to be so clear, and so unquestionable, that I am at a loss to understand on what ground an opinion to the contrary can be founded. I have heard it sometimes said, in explanation, that air, when analysed, presents the same elements from whatever situation it may be taken. This, of course, one can readily admit, but, probably, there is something existing in the air beyond the mere chemical admixture of those elements, that is capable of acting upon the health. I can only say, with respect to myself, that after being in London for some time, twenty hours' residence in the country makes me feel altogether a different man; I feel so manifest an accession of health that I cannot doubt the effect, and I have so often witnessed the advantages produced on the patients labouring under disease, simply by the change of air, that I have no hesitation in ascribing great efficacy to it. Some time ago I had an opportunity of seeing, in a family with which I was acquainted, the most marked effects thus produced; the circumstances of that case were sufficiently striking to induce me to mention them to you. The family consisted of a gentleman and his wife, both of whom were very healthy, and nine or ten children, who had lived for a great number of years in the neighbourhood of London, towards the northern part, but not exactly in town; the whole family had invariably enjoyed good health. There were marks about the children that led one to suppose they might possibly be the subjects of strumous disease, yet they had never suffered from it, and, I believe, the whole family had contributed very little to the support of our profession. The eldest son had once exhibited appearances of strumous glands of the neck, and when he got a little older he contracted the venereal disease, got a bubo, the cure of which was very troublesome, and gave the enlarged glands of the neck the opportunity of evincing the disposition of the family. Now it happened that the family was induced, by circumstances, to leave the neighbourhood in which they were living, and to take up their abode in London, where the place of residence was close and confined. Within two years from that time a most remarkable change took place in the family. First, a child, three years of age, died; it had been previously well and healthy, but became affected with strumous ophthalmia, inflammation of the eye-lids, soon after the change of residence. Indeed, it suffered from an undefined indisposition, which led one sometimes to refer the seat of disease to the head, at another time to the chest, and sometimes to the abdomen. At last it died of disease of the chest, and, on examination, I found tubercles of the lungs and disease of the mesenteric glands. Another child died, at the age of six months. The eldest daughter of the family, a remarkably fine and beautiful young woman, seventeen or eighteen years of age, began to evince symptoms of disease about the chest, soon after the family removed into town, and that ended in consumption, of which she died; and the father, who lived very carefully, had a very severe inflammatory attack of the bowels. All these events took place within the space of about two years, though during the whole period of their residence in the neighbourhood of London, where they had had nine children, nothing of the same kind occurred. The warning which these events gave was so impressive, that the parents could not fail to observe it, and they immediately determined on removing out of town again.

Gout and Rheumatism.—Gout and rheumatism belong to the medical, rather than to a surgical course of lectures; however, as the morbid states which are designated by these terms, are chiefly known to us by their production of local diseases, and as we often have cases in which the diseases are considered to be of a gouty or rheumatic nature, we cannot properly omit the subject altogether, even in a surgical course of lectures. We naturally, then, inquire what is the real nature of the disease in those cases which are called gouty and rheumatic,—whether the inflammations of the joints, particularly of the ligamentous and synovial structures of the joint to which the name gouty and rheumatic inflammation is given, are essentially different from common disease of the joints; whether the treatment is the same in the two cases; whether persons of gouty or rheumatic constitutions are liable, in consequence, to any particular kinds of inflammation in other parts of the body besides the joints. These are questions of importance which naturally occur to us.

The subject, perhaps, will be best elucidated if we take for consideration the case of some part which may be liable to different varieties of disease. Now, a joint of the body, the knee for example, may be the seat of common inflammation, or it may be the seat of that sort of affection which is denominated gouty or rheumatic inflammation. In either case we find that it is swelled, that the motions of the part are impaired, that it is more or less painful, and that it is usually, in some degree, rather red or hot. These are circumstances which are common to the affections in all cases. There may be a difference of degree in the symptoms, but such differences are not very constant, and, at all events, only constitute modifications of form. Indeed we may assert that if we were to look to local symptoms only, we should be unable to establish the diagnosis; we should not, by looking at the swelling, and the appearance of the part, be able to say whether it was common, or gouty, or rheumatic inflammation. Yet when we come to examine the cases, we find that there are differences in the causes, progress, and treatment, of the affection in the three instances.

Common inflammation is produced by mechanical injury of the joint, and this in all individuals, and under all circumstances; whatever may be the health and other circumstances of the individual, this mechanical injury will produce an inflammation. In rheumatism we see that the inflammatory action is immediately produced by cold or some other external influence acting on the part immediately affected, or on some other part of the body, but that the same causes do not produce the affection invariably in all individuals; they only produce it in certain cases. Cold or other external agencies, may be applied to a great number of individuals, but will only produce a rheumatic affection of the joints, in a small proportion of them. You require, therefore, for the production of rheumatism, the application of some external agency; and, at the same time, a particular constitution having a disposition to the complaint. In gout we see the inflammation arising without any external application at all. In fact gouty inflammation comes on frequently in the middle of the night when the patient is warm in bed and quiet, and when there can be no external cause applied to produce it. So that here we look in explaining the phenomenon simply to a certain morbid state of the constitution in those in whom it takes place. Here the effect is not the result of any local affection, it is rather a symptom of some inward or more general affection.

So far, then, as the cause goes, you see an obvious distinction between the three cases. Common inflammation is the general result of local agency upon the part; rheumatic inflammation requires a certain external agency, combined with a predisposition of constitution; and gouty inflammation is the result simply of a morbid state of the constitution, without any external cause.

In common inflammation there is a regular progress of the affection—it goes on uninterruptedly. The symptoms are at first slight, they become more considerable, and the disease gradually increases to a certain extent—to its obvious and full development. It remains for a certain length of time in a state of full activity; it then gradually declines, goes off, and leaves the patient without any liability to a future attack of disease.

In rheumatic inflammation, on the contrary, the affection is suddenly developed to its full extent; the joint is swelled, excessively painful, and becomes at once fully inflamed. Very soon after its appearance in one joint, the affection will show itself in others, so that it is no longer confined to one spot. The disease suddenly ceases in the part in which it first appeared, and at the same time appears in others; it will then cease in those parts, and perhaps re-appear in the original situation; and, after the affection has gone off, the patient will be very liable to future attacks of a similar kind. Its sudden and abrupt cessation, its extension to other joints, and its affection of several of them at the same time,—these are circumstances which particularly characterise an attack of rheumatic inflammation. In gouty inflammation, the disease, as in a rheumatic affection, exhibits its full characters at the first onset of the affection. The commencement of the attack is characterised by very severe pain in the part, this increases to a high degree, and then gradually declines. The patient next becomes comparatively free from pain, but within a short time it again commences and goes through the same stages. Thus an attack of gout consists of a series of paroxysms, which gradually diminish until they entirely disappear. Here, too, as in rheumatism, the complaint often abruptly ceases in one joint, and extends to another; and the joint that was the original seat of disease may again become affected. In common inflammation, then, we seem to observe nothing but the immediate development of inflammation in the part, consequent on local causes; but in rheumatic and gouty inflammations we have the local inflammation, that is, the affection of the part, and we have a something else superadded to that. The main object of our inquiry, therefore, is, What is the nature of that additional circumstance which distinguishes gouty and rheumatic inflammation from common inflammation of a joint? Now we find, that a person who experiences for the first time a gouty attack, almost invariably labours under an unnatural fulness of habit, that is, his constitution is in that state which is produced by excessive nutrition, the result of luxurious habits and indolence. Gouty inflammation takes place particularly in individuals who are of a sanguine temperament and a robust habit of body. Generally speaking, it takes place in the higher classes of society; at all events in those whose situations in life give them the power of indulging in sensual gratifications. Poor persons who have not the means of indulging their appetites, and have to work hard, very generally escape gout. When a gouty attack takes place in the first instance, the patient has a full bounding pulse; there is considerable heat of the surface; there is a white tongue, costiveness, and disorder of the digestive organs; that is, those circumstances are present which indicate a state of plethora from excessive nutrition. We cannot say that gout depends simply on derangement of the digestive organs, although these are generally disordered at the time. The truth is, that the state of the system which seems to create a disposition to gout, requires a sound and an active state of the digestive organs. It requires that a person should have a very healthy and active condition of the stomach, and that it should be capable of digesting a large quantity of aliment, to permit the excessive nutrition which predisposes to the disease. If the stomach be weak, and but little can be taken into it, gout is precluded. You will find those who are subjects of gout, to be persons whose habit of body has been vigorous, and who have been able to take large quantities of aliment.

Now this state of plethora will be attended, when it begins to take on disorder, with more or less derangement of the digestive organs, and the attack of gout is generally preceded by symptoms of that kind. Yet, immediately before the attack, it is very likely that the patient will feel perfectly well, even, indeed, so late as the night or the day before the disease shows itself. We cannot, therefore, regard disorder of the digestive organs as the cause; for a healthy condition of the digestive organs is the state that will lead to plethora. I may observe, that the occurrence of the gout seems to relieve the system from the condition of plethora under which it previously laboured. Now I speak of the condition of a patient when he first becomes the subject of gouty attacks; for when these attacks have been repeated, when a great number of the joints of the body have been over and over again lamed by it, and the individual has been suffering for a great many years; and when such persons have often experienced that affection of other parts of the body, which very commonly comes on in gouty persons, the powers of the system are eventually so much reduced by the attacks of disease and the advance of years, that the state of the patient becomes very different from what it was at the commencement of the attacks. You do not find those symptoms denoting plethora which I have mentioned. You will find a deficiency in the secretions, and this accompanied, probably, by a great degree of langour, and there is, indeed, a deficiency of power to produce a gouty paroxysm. But, in order to form an accurate notion of this, we must direct our attention to its commencement. At earlier periods, there is an occurrence of symptoms which would denote it; there is discernible, indeed, a loss of power requisite to produce the disease in certain parts, so that the real nature of the disease becomes obscured.

Treatment of Gout.—Now we have little difficulty in pointing out what is the proper mode of treating this complaint. The disease, in the affected part, is by no means the most important circumstance in the case; it is rather one of a secondary consideration; therefore the main object will not be in this case, as in common inflammation, to employ those local means calculated to reduce the inflammation. Generally speaking, we may almost neglect the consideration of the local affection. The local affection, indeed, in cases of gout, may be considered as a means adopted by nature to relieve the system from its state of plethora. It is a sort of egress by which the diseased action obtains a vent. The local disease of the joint carries that off which would otherwise show itself in some internal organ. Warmth, therefore, and rest, are circumstances to be attended to in treating gout, if the disease confine itself within moderate limits. If it go beyond this, we may employ leeches and fomentations. Under certain circumstances, we should bleed freely—we should purge the patient; we should generally administer calomel, in combination with antimony and colocynth, and other aperients, and put the patient on low diet. After venesection, purging, and the adoption of low diet, we derive great advantage from the employment of a remedy which is of rather recent introduction—that is, colchicum. This frequently acts on the bowels; it produces perspiration, and it lowers the pulse; it is given in various forms, either in the shape of powder (the powder is the bulbed root dried), or in a kind of tincture, formed from the same part of the plant, or in seeds. Perhaps the latter is the most invariable in its efficacy, and is the form in which its administration is to be preferred. Now this remedy has so beneficial an effect in gouty inflammation, that many persons have regarded it as a specific, as having a peculiar power of removing the effects which gout is capable of producing. Such are the means by which that condition of the system may be removed, from which the gouty attack of the part takes its origin.

The more important consideration is—what means should be employed to prevent the recurrence of the attacks? For if those habits of living, which, in the first place, contribute to produce that state of plethora which favours the production of the disease, are continued, you can have no doubt that the individual will be subject to future attacks; that those attacks will become more and more severe, extending to different parts of the body, and that they will ultimately reduce the patient to that state of suffering, in which life possesses very little worth desiring. Now there are two modes, two courses, which persons may take, in order to free themselves from this condition of the system; and unless they adopt those courses, and those alone, they will not succeed in their object. The first is temperance, and the second, exercise. Persons must be content to work hard, and live very moderately; they must, to use common language, keep their eyes open, and their mouths shut; and if they cannot prevail on themselves to do this, they will continue to suffer from gout. Now there are two very opposite things to which mankind are attached; sensual gratification—they wish to have the power of indulging their appetites, and leading indolent lives; and they like, at the same time, to enjoy good health. They want to have things incompatable with each other; but they must be content to choose for themselves. If they prefer good eating and drinking to health, they may have them; but if they prefer the enjoyment of real health, they must abstain from the vices I have named. The truth is, persons wish us to give them the means of having health, while they pursue these gratifications. We can give them their choice of these, and if they will continue eating and drinking, and bring on the gout, we can, to a certain extent, alleviate their sufferings when they arise; that is, we can *treat* the case so that the patient can go on a little longer. But if we speak of the *cure* of the gout, I know only one alternative; the state of system that renders a person liable to these attacks must continue, unless he will be temperate in his living and active in exertion. I know no other means of accomplishing the object except these.

Now it is a question whether we are to confine our notions of gout simply to its attacks on the joints of the body, or whether we are to consider that other organs, other textures, are liable to the condition which we should call gouty. When we see that the gouty constitution is essentially a condition of plethora, we easily understand that persons will be liable to attacks of inflammation in a variety of places. We find that persons liable to gout, very frequently have inflammatory attacks of the head, chest, or abdomen. We not unfrequently find, that when gouty disease ceases in the joints, it shows itself in other internal parts; and this is a very powerful reason against adopting violent measures for putting a stop to, or repelling, gout, when it appears in the limbs. From the tendency which exists in gouty persons to the establishment of some important disease in an internal organ, the common sense of mankind has pointed out the necessity of attending to this; and hence it has shown to persons, who are the subjects of the disease, that they should rather bear the inconvenience of gout, when situated in the extremities, than run the risk of repelling it to other more important parts.

Now when disease takes place in gouty individuals internally, it presents the same symptoms which characterise common inflammation. There are no external signs by which we can distinguish gouty inflammation in the head, chest, or abdomen, from common inflammation; and when we come to examine the bodies of such patients after death; we are not able to distinguish the inflammation arising from other causes. There is one source of evidence in a part which is discernible externally, by which we can discover it, and that is in the iris of the eye. This is a part very liable to inflammation in gouty constitutions; and the inflammation, as it occurs in the iris, we can, from some particular circumstance, distinguish from common inflammatory action of the part. I shall just read to you a few notes of a case or two of gouty inflammation of the iris, which will show you, that the texture, like the joints of the body, may be the seat of repeated attacks of inflammation, ending perhaps in its disorganization in individuals of gouty constitution. I was consulted, during the last summer, by a gentleman forty years of age, a stout person, of sanguine temperament, and fair complexion. The history that gentleman gave of himself was this: he had lived a very dissipated life at Oxford, drinking freely, and, in particular, of port-wine. He was very robust and hearty. At the age of twenty-two he had a severe attack of the gout; that was, a painful affection of the feet, toes, and other parts, which lasted for some months. This induced him to leave off drinking port-wine, but he had still lived very freely. He has had ten attacks of inflammation of the right eye, and the left has suffered on two occasions; at one time the inflammation occupied three years, and at that time he had some swelling in the right hand: with this exception, he had not suffered in the joints or limbs since his first illness. Now in the right eye, in which there were so many attacks of inflammation, the iris was changed in structure, so altered, that you could hardly recognise the natural texture of the part, and vision was nearly extinct. Here you see the cause which produced that state of the system on which the disease depended. I performed the operation for cataract on a gentleman who had lost one eye from gouty inflammation, and gouty characters had presented themselves in the other. This was a gentleman fifty-five years of age, of fair complexion, and sanguine temperament, who had passed several years in the West Indies, living freely, and suffering greatly from gout. Every joint was swollen and knotted in the most remarkable manner, and so as very much to alter the appearance of the limbs. Now this is a circumstance to be observed in these cases. There is a deposition of what are called chalk stones, either in the interior of the joints, or in the soft parts around them, which concretions, although called chalk-stones, consist of muriatic acid, combined with soda. These are not essentially connected with gout, because in the early stage of disease you do not find them. Well, then, the fingers of this gentleman were like so many strings of rough knots, and the hands altogether presented an appearance not at all like the natural appearance of hands; the ancles were the same; the pupil was nearly closed in one eye, and there was considerable adhesion and opacity of the capsule of the lens. Being very unwilling to operate, from the appearance and state of the individual, I recommended him to use belladonna. At last I operated on him by his own desire, rather than agreeably to my own wishes. The gouty disposition was so great in this individual, that I thought an operation would undoubtedly bring on a fresh attack. He had lived for several weeks very temperately before I performed the operation; I had seen him repeatedly, and he had taken Plummer's pill, and other medicines, and yet he had the strongest pulse I ever felt. I detached the capsule of the lens, and performed the operation, and, fortunately, no inflammation followed, yet the state of the pulse induced me to bleed him five times afterwards. In about two months the effect of the operation was accomplished, and he had got perfect vision. I remember, on asking him, some considerable time afterwards, about the state of his fingers, that he said, of late years, he had not been troubled with any gout, for he had got a remedy that he used himself, without going to any doctor, and that was colchicum. Whenever he found any thing like gout making its appearance, he took a full dose of the colchicum, and that prevented an attack.

Rheumatism.—In rheumatism we find a state of the constitution in some measure analogous to that which occurs in gouty persons, although not altogether similar to it. The occurrence of a rheumatic attack is very commonly preceded by symptoms of disposition, and a very feverish state of the system frequently occurs before the joint swells. The swelling of the joint is accompanied too, in those cases, with a considerable febrile disturbance of the system, which is to be regarded simply as a sympathetic effect of the local disease, and the local disease and febrile disturbance are very frequent attendants on each other. Sometimes the local disease is suspended, and the feverish symptoms go on. That there is a general morbid affection of the system in this case is very clear. If you bleed a person while in the state which immediately precedes the development of rheumatic affection, or in the early stage of it, you will find that the blood exhibits inflammatory characters; you have evidence, therefore, that the state of the blood is certainly changed; there is a something wrong in the system that shows itself in the state of the blood.

Treatment of Rheumatism.—The treatment here, then, will consist, chiefly, in that which is applicable to gout; that is, you must attempt to relieve that state of the system from which the rheumatic attack is derived, and this is accomplished more by general means than by any local treatment of the inflamed joint. A moderate loss of blood in these cases is advantageous; the employment of aperient medicines, low diet, and rest, and the treatment of the part immediately affected, as I have mentioned in the case of gout, must depend, in some measure, on the severity of the local symptoms. In some cases, local treatment alone is sufficient, without other means. You may employ local bleeding, fomentations, poultices, and, subsequently, blistering. Sometimes, in rheumatic affections, colchicum is also very beneficial, although it does not exhibit its effects in controlling rheumatism as it does in curing gout.

We are certainly only properly acquainted with rheumatism as it affects the joints. Like gout, it appears to attack chiefly the synovial and fibrous structures of a joint; but, in common language, rheumatism is understood in a more extensive acceptation of the word, and is considered to include affections of the muscles, and several other painful affections of parts not immediately connected with the joints, the diseases of which ought, perhaps, to be ascribed to other causes. There may be a great doubt as to whether painful affections of muscular parts, and painful affections occurring about the back and many other parts, ought to be classed as belonging to the same kind of disease which is considered to constitute the rheumatic affections of the joints themselves. It is probable that they, or some of them, ought rather to come under the head of *neuralgia*, an affection of the nerves, than under the head of rheumatism.

A continuation of the subject of specific disease will lead us, in the next place, gentlemen, to the consideration of venereal diseases; which we will defer to the next lecture.

LECTURE XXIII.

Venereal Diseases—History—Syphilis—Treatment.

Gentlemen, the expressions, syphilis and venereal disease, are used indifferently to denote a train of morbid appearances that arise from infection communicated from a diseased to a healthy person, either by sexual intercourse, or in some other direct manner. The latter of these two expressions is the more general; for venereal disease, according to the etymology of the word venereal, includes all those diseases that proceed from sexual intercourse. Adopting that expression, then, in its most general sense, we divide venereal disease into syphilis and gonorrhœa.

The various appearances which are included in the term syphilis, fall under two general divisions, the primary and secondary symptoms of the disease. The primary symptoms consist of those which are immediately produced by the application of the poison to the human body; that is, ulcerations, and swellings of the glands consequent on those ulcerations; primary ulcers; and buboes, the technical term given to those glandular swellings in the groin, which arise from ulcerations taking place in the generative organs of either sex. The ulcerations are very commonly called chancres; so that when we speak of primary symptoms, we say they consist of chancres and buboes. The secondary symptoms consist of various affections of the skin, of the throat, of the tonsils, of the mouth, of the eyes, of the nose, of the ears, of the testicles, of the bones, and of the joints. These latter are the affections by which the constitutional form of the disease is distinguished.

The occurrence of constitutional symptoms is not necessary to the existence of syphilis, for it may consist chiefly in the appearance of the primary symptoms just mentioned; that is, of ulcerations of the generative organs, with or without buboes. All such primary are not invariably followed by secondary symptoms. Out of a given number of cases of primary symptoms, under any kind of treatment, you will find secondary symptoms only in a certain proportion of them. This proportion is diffently stated by different observers. Some have remarked, that the secondary symptoms will take place in one out of three cases; others say they are not to be expected in more than one out of twenty cases: at all events we have syphilis, recognised as such, without the occurrence of any secondary symptoms.

Now the word syphilis, as I have explained it to you, does not denote any single affection of any single texture. Like scrofula, it is a general term, under which are included affections of a variety of textures and organs of the body. It is generally considered, that syphilis was not known to the ancients; at all events, there is no clear description of the disease given, prior to the end of the fifteenth century. There are scattered notices of ulcerations occurring on the generative organs, both in the older medical writers, and in various other authors who flourished before the time I have mentioned; but we do not find in any of them a description of the disease at all according with the view now taken of it by ourselves, and, in particular, there is not an account of what we call secondary or constitutional symptoms in any one instance prior to the very end of the fifteenth century. Now about that period two remarkable events took place. The first of these was the discovery of what was called the new world, by Columbus; who returned from the island of Saint Domingo, to Spain, in 1493, after discovering the islands of the West Indies; the other event to which I have alluded was the invasion and conquest of Naples by Charles VIII. king of France, who entered that city in the year 1495. Now the origin of syphilis has commonly been referred to one or other of these two events. Many, have believed that syphilis was a disease originally epidemic in the West Indies, in the part that was first discovered by Columbus — the Island of Hayti; that it was brought to Europe by the companions and followers of that navigator, and was thence disseminated over this part of the world. For my part, I can see no direct evidence—in fact, no evidence at all, that syphilis existed in the island at the time that Columbus discovered it; certainly no account of any such affection is given in the original narrative of the expedition of Columbus, nor in the earliest accounts published of what was seen and observed there; and the idea of the origin of venereal disease in the West Indies, in the way that I have mentioned, is first suggested by writers who went to Saint Domingo some time after it was visited by Columbus.

Farther—we find, on examining the historical evidence upon this subject, that there are unequivocal traces of the existence of the venereal disease in Europe some years prior to the discovery of Hayti by Columbus. We meet with passages in the writings of authors who lived eight or ten years before that time, which show that the venereal disease was then not unknown. There is, in particular, a passage from a letter from Peter Martyr, who filled an important situation in Spain, dated 1488, (before the time that Columbus made the discovery), which affords unequivocal proof that the venereal disease was known at that time. If the venereal disease had been found by Columbus and his crew in Saint Domingo—if they contracted it and brought it back to Europe, we should expect to find that it had first existed in Spain, and that it had extended from Spain over the rest of Europe. Now we do not find that such was the case. If we consider that the venereal disease first originated at the time alluded to, it appears that it had broken out in Italy or Frsnce, not in Spain; and the name by which the disease was known in the first instance, points out this circumstance clearly. The name that was first given to the venereal disease, and which, in fact, it has retained up to the present day, is *morbus Gallicus*—the French disease. It was called by the Germans the French pox; that was the familiar expression in this country, and is known up to the present time. The French do not seem to have liked this name, and they called it the Neapolitan disease. But at all events, it was known by one or other of these names—nobody thought of calling it the Spanish, or the Haytian disease—they gave it no name that denoted its origin to have been either in Spain or in the West Indies.

I conceive, therefore, that we may reject entirely the idea of the venereal disease being originally epidemic in the West Indies, and being imported by Columbus and his crew into Europe. If we reject the hypothesis of the West Indian origin of the disease, we may next inquire whether there is any clear proof that the disease broke out at Naples or Italy at the invasion of that country by the French, and whether it was conveyed by the military who accompanied Charles VIII. to France and the northern parts of Europe? I cannot say that it seems probable that the disease should have occurred at that era of the world: we cannot trace out any peculiar circumstances in the state of those countries at the time that would throw light on the origin of this strange affection. Hence we cannot be surprised that many of those who have examined the historical evidence upon this subject, have come to the conclusion that syphilis existed before either of these events. The circumstance of its not being accurately described may have arisen from persons not having observed it with great attention—not having taken cognizance of its symptoms, not sufficiently understood those which we now know to be connected with each other. At this distance of time it is difficult for us to arrive at satisfactory evidence upon the subject, and it is not important that we should—it is only a question of curiosity. For my own part, I cannot help entertaining the opinion that the venereal disease existed long before the events that I have now alluded to; in fact, that it is just as old as the promiscuous intercourse of the sexes, which we now find to be constantly connected with it. There is no instance that we know of in which promiscuous intercourse takes place, that the venereal disease does not exist: at all events, this shews itself clearly as an important circumstance in aggravating and extending the disease. The greatest difficulty in the way of this belief is the silence of the old writers on a subject which to us appears so extremely important: we must consider, however, that both in the writings of the ancients, and of the more modern authors who wrote shortly before the end of the 15th century, we find various passages in which ulceration is mentioned as existing on the generative organs of both sexes. We find mention made of buboes, and we find clear evidence that a belief existed that such appearances could be communicated from one individual to another by sexual intercourse.

There is a curious document published by Astruc, who is the author of a work in which he collected together all that was known respecting the venereal disease at the time he wrote. He gives a curious document, which shews that at a period long anterior to the discovery of the West Indies, or the invasion of Naples, the possibility of communicating the disease in this way was recognised, and even made the basis of legal provisions. The document I allude to is an ordinance published by Johanna, Countess of Provence, and Queen of the Two Sicilies, in 1347. She seems to have exercised a very maternal kind of care over the subjects committed to her charge, for this ordinance establishes a public brothel, and lays down regulations for its conduct and management. It seems strange that a young queen should undertake a business of this kind; but the truth is, in foreign countries there were various similar establishments recognised by law; and in this moral town itself, about the same time that Queen Johanna granted this privilege, there was a public brothel in Southwark, under the care of the Bishop of Winchester, and the regulations and laws relating to it are still extant. Now the document of Queen Johanna sets out with ordering that all the girls who resorted to the establishment should wear a red epaulette or shoulder-knot on the left shoulder; she then points out in what part of the town it should be situated, and what is singular she directed that it should be placed near the convent of the Augustine friars—a situation that she perhaps thought would be convenient for the inmates of both establishments. But the important regulation is the fourth: she there directs that every Saturday a barber, deputed by the consul of the town, should examine all the girls in the establishment, and if it was found that any of them had contracted illness "by fornication," that they should be set apart from the rest, and not allowed to exercise their calling, lest the young men should contract the disease. It thus clearly appears that a knowledge existed that this particular kind of disease could be communicated from one person to another previous to the period that has generally been supposed to be the epoch of its origin. This document is dated 1387—you will find it in the work of Astruc; and I may say, generally, that if you feel a curiosity in investigating minutely this part of the history of syphilis, you will find a collection of all the documents regarding it in that work.

I do not lay so great a stress upon the silence of the older writers, as some of those do who have considered the subject. It does not appear to me very extraordinary that they should not have given a clear description of the venereal disease: they may not have understood the nature of it, they may not have understood the various relations in which the different symptoms are to be viewed. Supposing we saw a person with a certain eruption, we should not know (unless previously informed) that the eruption arose from a sore the patient had had weeks or months before. It may be then, that a long time may have elapsed before the relation of the symptoms to each other was comprehended. We find many instances in the history of our art, where things, that appear to us most obvious, must have been overlooked for a long time. Although a knowledge of the small-pox existed for centuries, yet people were ignorant that that disease was contagious; this is only a circumstance of modern knowledge. The small-pox, measles, and scarlet fever, were confounded together for centuries, and no distinction was made between these three affections till a comparatively recent time; indeed between the measles and scarlet fever, no distinction was made till about the middle of the last century. That the mere silence of persons who have written on a subject respecting some parts of its history, does not prove that what they omitted to notice did not exist, we have clear evidence from other considerations. Now Mr. Hunter, who must be deemed to have been a man of great knowledge, took much pains in investigating the venereal disease: the late Mr. John Pearson was a man of extensive learning, and he also laboured in the examination of the subject, but neither of those gentlemen was acquainted with gonorrhœal ophthalmia, or syphilitic affections of the eyes, in which organs the disease has always been strongly marked. Now if persons, two or three hundred years hence, were to argue that such diseases did not exist now, because these gentlemen had not mentioned them, they would come to a very wrong conclusion. In the same way, I apprehend, we should adopt an erroneous supposition, if we imagined that the venereal disease did not exist in ancient times, because the medical writers of those times have not given a clear description of it.

Syphilis can only be produced by a poison communicated from a diseased to another person. In the great majority of instances this morbific influence is caused by the secretion of a sore, which, being applied to the sound surface of a healthy part, produces the primary symptoms of the disease. The matter, or pus, thus secreted from a primary venereal sore, is capable of infecting another person to whom it is applied—that is unequivocal. The next question will be,—Is the poison equally conveyed by the matter formed in a bubo? That I do not know.

Further, the venereal infection is conveyed by the blood of the mother to the child in utero, especially when the mother labours under the secondary, or constitutional form of the disease. Whether it is equally conveyed in the primary form of the disease I am not exactly aware. A question naturally arises, whether the female can receive the disease by connexion with a man who has secondary symptoms? And this is a question rather difficult to solve, from the want of clear evidence on the point. When we come to question individuals upon the subject, the motives for concealment are so strong, in a case where the honour of the parties is so much concerned, that it is very difficult to obtain testimony on which our reliance can be placed. I can only say, however, that I have seen some instances, where, from all the inquiries I could make, I was led to conclude that syphilis had been communicated in this way from husband to wife; that is, when the husband was labouring under constitutional symptoms, he had cohabited with his wife, and communicated to her the disease. I do not see any impossibility in its being communicated in this way. The communication of it from the mother to the child in utero clearly shows that the blood of the mother becomes affected; and if blood be capable of transmitting the disease, I do not see why the seminal secretion should not be equally capable of transmitting it; this is a point, however, about which we have no clear knowledge.

We frequently meet with the expression, venereal poison, or virus, and we are naturally anxious to know what that poison, or virus, is. Now, the only explanation I could give of it would be this, that it is that state of the secretion of a sore, which renders it capable of producing the disease in another person; that it is that state of the blood in the mother which renders it capable of communicating the disease to the fœtus in utero, but what that particular state is we are unable to describe; we are only able to observe its effects; that is, we have no knowledge of any chemical changes or properties by which the matter of a sore of this kind, or by which the blood of a pregnant woman under such affections, differs from ordinary matter or ordinary blood. We are only conscious of the difference from the effects. When, therefore, we read of the venereal virus entering the constitution, or of its being expelled from the constitution, or of the constitution being impregnated, or of its lurking in the system, these are so many figurative expressions which have no precise meaning.

The next question is, whether there is one kind of poison, or whether there are more venereal poisons than one? Now, inasmuch as the real nature of the poison, that is, the real source of the symptoms, is so far unknown to us as I have just explained to you, this question resolves itself into another, which is, whether, among the various symptoms we recognise as syphilitic, there are such differences; and whether those differences are constantly observed in such states as to induce us to refer them to different sources? We must acknowledge that, on a superficial view of the subject, there is a considerable diversity of those symptoms to which we give the name of venereal, or syphilitic; that there is considerable diversity, whether we regard the primary or the secondary symptoms. The primary may be a simple abrasion of the cuticle, or an excoriated ulcer, or an ulcer with an indurated base or edge, or a phagedenic or a sloughing ulcer. Syphilis may consist either of an ulcer alone, or of an ulcer with a bubo; or it may consist of those primary symptoms, followed by papular, tubercular, or scaly eruptions of the skin; or by ulceration of the skin; or by superficial or excavated ulcerations of the tonsils, and sometimes of an enlargement of the bones, periosteum, or of the joints. Heretofore all the appearances called syphilitic were referred to one source; they were considered only as the various effects of one poison. In more modern times, and more particularly by Mr. Hunter, a distinction was attempted to be drawn, derived from the effects of mercury. When a disease was cured without the administration of mercury, it was considered not to be syphilitic; and those diseases resulting from sexual intercourse, which disappeared under the influence of mercury, were considered to be syphilitic; thus was drawn the criterion of the syphilitic, or non-syphilitic cases by that circumstance. Mr. Carmichael, of Dublin, who is surgeon to a hospital in that city where a great number of patients labouring under this disease are received, has published a work containing many good observations, and very excellent practical rules for the treatment of this disease. In this work he has advocated the plurality of poisons. The result of his researches has led him to believe, that there are more poisons than one. He has attempted to show, that each particular kind of primary ulcer is attended with its own peculiar set of secondary symptoms; he has, therefore, collected in a set the primary symptoms which belong to one; and in a separate set those which belong to another. He has thus established, in his opinion, four distinct kinds of disease, which he considers to be the result of as many distinct poisons. I am fully aware that many of the distinctions which Mr. Carmichael has pointed out are founded in nature; and if you read his book, and consider the subject, you will recognise the justness of many of his remarks. I do not, however, find that the combination of symptoms which he has noticed as constituting the differences, are so constant, and so invariable, as to lead me to the same conclusion he has arrived at, namely, that there are four different poisons. I find that the particular kinds of appearances are more mixed together than he is willing to admit; that the peculiar symptoms are not met with so distinctly as he has described; so that, at present, I cannot go along with him in the idea of adopting these four kinds. At the same time I recommend strongly to you, the perusal of his work on the venereal disease, as being, perhaps, the best practical treatise on the subject, and certainly, in my opinion, as containing the best rules upon the first point, namely, the important one of treatment. Now, in investigating this matter of the unity or plurality of syphilitic poisons, we come to a difficulty at the very onset, and we find that our knowledge is extremely imperfect. We do not know, in the first instance, whether one particular sore propagates its kind or not. We cannot say whether a phagedenic ulcer, for example, in a woman, would communicate a phagedenic ulcer to a man; nor indeed can we venture to assert, that the existence of ulceration at all in the woman is necessary to the production of an ulcer in a man. So that this very first point in the natural history of the disease is at present particularly obscure. We want evidence on the subject; in fact, we are still likely to want it, for we cannot make any distinct experiments; we cannot inoculate this pox as we do small-pox Now I had a woman in the hospital, a married woman, who had contracted the disease from her husband; and the disease in her consisted of a well-marked phagedenic sore of the nympha, which destroyed nearly one of the nymphæ. At the same time the husband was an out-patient at the hospital; he had superficial sores on the prepuce, which had not the slightest appearance of the phagedenic character, and that was the state of disease that gave it to the woman. Dr. Fergusson, inspector of the British forces in Portugal, had occasion to see an officer who was labouring under chancres of the worst kind; the parts were highly inflamed, and there was considerable swelling, consequent on sexual intercourse four days before, and he had committed no impropriety so as to account for the bad state of the sores. Dr. Fergusson, with great difficulty, and very active antiphlogistic treatment, prevented mortification in that individual; however, he had contracted the disease from an opera dancer, at the Lisbon theatre, who went on infecting others and dancing all the time, apparently as if nothing had been the matter with her. Mr. Evans, surgeon to some of the British forces, who has published a work on ulcers of the genitals, was present at the inspection of some of the public women in France, who were obliged to undergo examination by order of the police. In some instances he saw more than a hundred cases, and they presented very little disease indeed; what existed was merely a slight discharge and excoriation; at the same time the British soldiers, who had had intercourse with them, exhibited numerous instances of disease of the ordinary kind, which they only could have contracted from those very individuals. Again; it has happened in military, and in civil life, that different individuals have had intercourse with one and the same woman, and it has been found that one has contracted gonorrhœa, another a sore on the prepuce, whilst a third has escaped without any disease at all. We are, therefore, much in the dark respecting that primary point in the investigation of the disease. We do not really know whether one particular form of the disease propagates the same form in other individuals; we are ignorant of the particular circumstances under which each particular form arises.

Under this uncertainty, it has been the opinion of many, that the diversities exhibited by the various symptoms of syphilis, have their origin in circumstances belonging to the constitution of the individuals in whom they occur; that the particular characters of the disease, in different individuals, arise from differences in the constitution—differences in the state of health at the time when the disease is contracted—differences in the treatment—differences in the management, both locally and generally. In favour of this view, there is a remarkable circumstance which has been mentioned by Dr. Fergusson. He has given a short paper on the state of the venereal disease in Portugal;—it is published in the fourth volume of the Medical and Chirurgical Transactions. He says that the venereal disease in Portugal is extremely mild; that the natives of that country are in the habit of treating it by vegetable decoctions and low diet; that they suffer little from it; that it seldom produces serious symptoms; that when it goes into a constitutional form, it wears itself out under this treatment, not interfering materially with the health. Thus he considers that the disease among the Portuguese has lost its virulent character; but he says that the British troops and officers had the venereal disease in that country with the utmost severity; that, in fact, a greater number of instances of loss of the penis occurred among them, in a short time, than he supposed could be presented by all the hospitals of the country for a number of years. Yet the disease had arisen from the infection of the mild disease that I have just mentioned. The secondary symptoms were of the most severe kind, and extremely intractable.

If we look at cases of syphilis collectively, we should say that, although it is a disease of an inflammatory character, it is rather chronic than acute; that the inflammation is not high—not rapid in its progress—not attended with serious constitutional disturbance; yet particular symptoms, of high inflammatory action, often show themselves, attended, frequently, with well-marked fever.

Respecting the natural course and terminations of this disease, the most erroneous opinions have prevailed, even until quite modern times. It has been represented that syphilis is regularly destructive in its nature; that it destroys by ulceration the particular organ in which it is seated; that it proceeds from one part to another with unrelenting fury, according to the descriptions of some, and that in fact its ravages can *only* be controlled by mercury; that if mercury be not employed, it certainly proceeds to the destruction of the individual in whom it takes place. Such is the common picture given of syphilis. This, in fact, was the general opinion entertained of the nature of disease, at the time when Mr. Abernethy published his observations on diseases resembling venereal; and, before he published that treatise, he took the pains of applying to several of the most eminent surgeons in London, to ascertain their opinions upon the subject. Amongst that number were Mr. Cline, and Mr. John Pearson—two gentlemen, in whose experience and judgment the public placed the greatest confidence. Now, all those to whom he applied were unanimous in their opinion, that the action of syphilis was *regularly progressive;* that it destroyed the parts in which it was seated; that it proceeded from part to part, destroying as it went, until it proved fatal to the individual, unless timely stopped by mercury; and that *mercury* was the *only* means by which its ravages could be put an end to. Now the experience of the last few years has sufficed entirely to overthrow this generally-received notion. It has since been made out very clearly, that every symptom of syphilis can be removed without mercury, that there is not a single symptom of the disease which may not, if left entirely to itself, come to a natural conclusion—wear itself out—without destroying the individual. Indeed, so great has been the revolution of opinion on this subject, that some persons, and those of considerable experience and judgment, have adopted the opinion that the mercury which is used for the primary, is the source of a great part of the secondary, symptoms; and they have proscribed the use of it entirely from their practice. The former, however, I should mention to you, had been a generally prevailing opinion. It was entertained by Astruc, it was entertained by Hunter, and it is the basis on which all the reasonings, in his work on the venereal disease, proceeds. It was entertained by Mr. Abernethy, adopted by him from Mr. Hunter, and it was the foundation of those opinions which Mr. Abernethy has promulgated, and the basis of the opinions he, from time to time, delivered on this point. Now the once very extensive prevalence of this completely erroneous notion, and the firm faith with which it was held, are calculated, in my opinion, to teach us a very salutary lesson, that of examining for ourselves, generally-received doctrines; that of placing very little confidence in the opinions of the greatest names, when they relate merely to matters of opinion. Inasmuch as this notion of the progressively destructive nature of syphilis, except cured by mercury, has been entirely renounced—of course the various notions built on that opinion respecting the nature of syphilis, and the diseases resembling it, may be all set aside, and completely discarded from the surgical vocabulary. A variety of words that were found in the writings of those persons, such as *lues syphilis*, *lues syphilodes*, *pseudo-syphilis*—all these are expressions which have no clear meaning, but are expressions found in the earlier writers, upon the erroneous notion I have stated; we may, therefore, discard them entirely; they have no other effect, in my opinion, than that of increasing the perplexity of a subject, which, of itself, is sufficiently difficult.

The most important feature in the natural history of syphilis, is the progress of the complaint from one part of the body to another; the succession of symptoms it shows in successive organs and textures; the frequent renewal of the disease in the same organs or textures, after it has apparently ceased. Some forms of the disease are attended with considerable suffering, great local suffering, and considerable constitutional disturbance. When we find that these symptoms are capable of showing themselves, from time to time, in different parts; when we find the disease come on again and again in the same part, when we find that those affections require, as they frequently do, the employment of vigorous and active means of treatment, which exert powerful influences of the animal economy, we cannot wonder that the constitution is frequently enfeebled by the disease, and that in some cases, patients ultimately sink under it. In this point of view, the nature of syphilis is sufficiently serious, although not so destructive as was formerly supposed. I may observe, however, that the description I have now given, applies to only a very small proportion of cases, out of the whole number of syphilitic attacks. It is only in a very few instances that such obstinate relapses take place, and the instances are extremely few indeed, in which the disease proves fatal in this way.

Treatment.—With respect to the treatment of syphilis, considered generally, I have already mentioned to you the common notion of mercury being the only means by which it was supposed possible to control or arrest the progress of the disease; and this opinion was very generally held in the profession, from the time I have mentioned to you as being the supposed period of the origin of syphilis, to within the last few years. It should be observed, however, that when we come to inquire minutely into the matter historically, we find that there were always some persons who had doubts on the subject; that this opinion, although so general as to have swayed the profession, was not absolutely universal. It was found that mercury itself, in many instances, produced prejudicial effects; that, in many cases, diseases supposed to have been cured by mercury came on again, and thus the remedy appeared to be imperfect. Hence surgeons, at all periods, since the disease has been well known, have turned their attention to the discovery of other means by which the disease might be more effectually controlled. Thus, from time to time, various other articles have been introduced as remedies, and cases have been published, in which those articles, various as they are in their nature, are said to have produced the desired effect of curing the disease. Now, according to that prevalent notion of mercury being the only cure for the disease, it was said of cures stated to have been performed by the use of sarsaparilla, opium, and nitric acid, that those patients got well, because it was not the venereal disease. We can have no doubt that those cases which are said to have been cured in this way, were just as truly syphilitic cases as others; that those cases which were supposed to have been inaccurately reported, and said not to be venereal, were really syphilitic, and were cured by those means. The clearest evidence, however, on the subject respecting this point, that mercury is not necessary to the cure of the disease, has been offered principally by the investigations of the late Mr. Rose, a surgeon of St. George's Hospital. Having frequent occasion to treat venereal disease, in consequence of being surgeon to one of the regiments of guards, and happening to turn his attention to it, he found a great difficulty in coming to any clear notion as to the fact of this dogma respecting mercury being absolutely necessary to arrest the progress of, and to cure the disease. Having conceived some doubts, he determined to put the point to the test. He had the charge of the Coldstream Regiment of Guards, and he determined to try the point in that regiment. They were stationed in London, and consequently had intercourse with all the lowest prostitutes of the town; they therefore afforded him an ample number of cases. He determined to treat all the primary sores in that regiment by the common antiphlogistic means, and not to employ mercury in one single case of them. Let them be of the character denoting the particular nature of the venereal disease, or of any other character, he determined they should be treated without any mercury. There is a paper in the eighth volume of the Medical and Chirurgical Transactions, containing the result of his experience in this way; and after having followed this plan, for a space of, I think, above two years, he found that all primary syphilitic symptoms whatever, could be cured without the employment of mercury. Whether it was an indurated chancre, or a superficial sore; whatever it was, he found that the ordinary antiphlogistic means, simple local applications, rest, and low diet, were sufficient to conduct those cases to cures; and that, in fact, for that length of time he employed no mercury whatever. Secondly, in the treatment of the primary symptoms of syphilitic affections, he says that in some instances they were not longer than if mercury had been employed. He states, that perhaps there was a greater number of secondary affections than if mercury had been employed; but he says, those secondary symptoms were always mild, and that they very speedily gave way to simple means. Thus he established, on the clearest evidence, that mercury is not necessary. He completely overturned the notion of mercury being required, and shewed that the disease did not possess that supposed destructive character to which I alluded; and I am of opinion that this is the most important step that has been made towards understanding the real nature of the disease since it was first known; and I should place the fact that has thus been established, first by Mr. Rose, in point of value, far beyond any of the speculations or views contained in the work of Mr. Hunter on the venereal disease.

In consequence of the paper written by Mr. Rose, the non-mercurial treatment of the venereal disease has been very extensively tried in the British army, and registers have been kept of the results of such treatment; so that, I believe, with the Army Medical Board, there are now registers showing the results of the treatment of venereal diseases in many thousands of cases, both with and without mercury, and thus affording a very ample means of comparing the value of those sorts of general treatment: and the result of the non-mercurial treatment very satisfactorily confirms the conclusion at which Mr. Rose arrived; namely, that mercury, although it might acilitate the cure under certain circumstances, is not absolutely cessary to be employed. In other countries, as well as in his, similar investigations have been made, and with similar esults; and the consequence of these investigations has been ertainly a great revolution of opinion on the subject, and a orresponding change of practice. In consequence of this lteration of opinion, persons who have venereal diseases, re now no longer doomed to go through those long and very evere courses of mercury to which they were subjected, when ercury was supposed to be a specific, and absolutely necessary or the cure of the disease. In a great many forms of venereal isease the employment of mercury is almost entirely abandoned; and in those cases in which it is still given, it is used more moderately. Some have even gone farther; and I may mention that Dr. John Thomson, the present teacher of medicine n Edinburgh—a person whose medical learning and experience, and judgment, need no commendation of mine—has ong adopted the non-mercurial treatment of syphilis; and, for considerable number of years—I believe I may say, has entirely iscarded mercury, both for primary and secondary affections f all kinds; administering mercury in no form of venereal isease; and he considers that the patients recover much better without it. He is of opinion that many of the affections, egarded as the secondary symptoms of syphilis, especially the more aggravated forms of them, are owing to the use of mer-ury, an opinion in which I do not altogether concur; nor can agree with him in discarding mercury from our treatment of yphilis altogether. I have seen so many instances in which he efficacy of the remedy has been undoubted; I have seen so many cases in which the disease might get well without mer-ury, but in which it has got better, more quickly, and with ess effect on the constitution, than without mercury, that hough I fully agree in the modified employment of mercury, nd in the propriety of using it more sparingly, I cannot go so ar as to discard it from practice altogether. I still think it a aluable remedy, capable of being very useful in the treatment f venereal diseases.

LECTURE XXIV.

Treatment of Venereal Diseases continued.—Advantageous and Injurious Effects of Mercury—Diet.

Employment of Mercury.—Mercury, gentlemen, is employed in the treatment of syphilis, either simply, as a local application, or as a remedy capable of producing a powerful influence on the system at large; and, through that influence, of arresting the progress of, and ultimately curing the disease. Mercury, in its metallic form, is inert; it produces no effect on the human body. It may be swallowed in any quantity, and will do neither good nor harm. It exerts no influence except when it is combined with oxygen, or with some acid. Of the local applications, perhaps, the most common is what we call the black wash: I believe rather an unchemical combination of calomel with lime-water; the proportions are fifteen grains of calomel to an ounce of lime-water. This is used as a lotion, by dipping lint into it, and applying it to the venereal sores; and, perhaps, it is one of the best modes, if not the best, of applying mercury locally. There is another wash, called the yellow wash; that is, a combination of the oxymuriate of mercury, corrosive sublimate, with lime water; the proportions are a grain and a half or two grains of the oxymuriate to the ounce of lime-water. This is used in the same way. We have also the mercurial ointment, which, however, is not very frequently applied to venereal sores. We have the red precipitate ointment, the unguentum hydrargyri præcipitatum of the Pharmacopœia, which is more commonly used. We have also the unguentum hydrargyri nitratum, which also is not very commonly applied to venereal sores. Another mode in which mercury is applied locally, is that of fumigation; and, for this purpose, sulphuret of mercury is employed, the hydrargyri sulphuretum rubrum, cinnabar, is the drug commonly used. The mode of employing mercury in this way is this. You raise the temperature of a piece of iron to that of a red heat, and throw a certain portion of the cinnabar upon it, generally half a drachm, or a drachm. You then place over the iron and cinnabar a copper funnel, which terminates in a pipe through which the fumes of the cinnabar arise; and in this way you may direct the fumes to the ulcerated surface.

The cinnabar is volatilised by the heat, and rises in a white smoke. A grey pellicle is gradually formed on the ulcerated surface exposed to the fumes.

When we endeavour to produce a mercurial effect on the constitution in this disease, we can accomplish it, generally, either by applying certain forms of the mercury to the surface of the body, or by administering it internally. The most common mode of applying it externally is by that of friction, that is, rubbing on the inside of the thighs before the fire, for a space of about twenty or thirty minutes every night, a drachm of the mercurial ointment. Sometimes half a drachm only is used; sometimes a drachm is employed twice in the course of a day. When the rubbing is discontinued, the chief part of the ointment will be found to have disappeared; it may be said to have been rubbed in; the patient should not wipe off what may be adherent to the skin, but put on a pair of flannel drawers, and continue to wear them during the process. If pimples be brought out by the rubbing of the ointment on the inside of the thighs, the patient must vary the place of application, by rubbing it on the outside or anterior part of the thighs; and, inasmuch as a certain portion of it adheres to and clogs upon the skin, it is necessary to wash the part clean with soap and water every third night, before rubbing in any more. Now when the mercurial ointment is applied in this way to the external parts of the body, it is capable of producing the same effect on the system, as is produced when the remedy is taken inwardly in other forms. By the action of friction, the mercurial ointment is made to enter the absorbent vessels, and thus it is introduced into the system. The mere putting of the ointment in contact with the skin, is not sufficient; if you merely do this, the desired effect is not produced; the mechanical art of rubbing is necessary to accomplish the purpose. A principal advantage of employing mercury in this way is, that it does not produce those unfavourable effects on the alimentary canal, which often follow the internal use of mercury; or if it do produce any inconvenience, it is in a much less degree. Hence friction was formerly the general mode in which mercury was employed for the purpose of affecting the system. The troublesome nature of the proceeding has, perhaps, led in some measure to its disuse, so that it is not so common now as the internal administration. Mercury may be introduced into the system through the skin by general fumigation of the whole surface of the body. If the naked body be placed in a square box, at the top of which is an opening for the head to pass out, and if some of the preparations of mercury are volatilized by means of a hot iron placed in the bottom of the box, the body becomes exposed to the volatilized mercurial fumes, and in this way a very speedy effect on the system may be produced. For this purpose the hydrargyri oxydum cinnerum may be thrown upon the hot iron; or the sulphuret, or cinnabar, may be employed. The cinnabar, however, is rather too powerful to be employed in this extensive way. I may observe to you, that this mode of using mercury will quickly produce the intended effect. The cinnabar fumigation is not an uncommon mode of applying the mercury to ulcerations of the throat, and I have many times seen salivation produced by it.

Of the forms of mercury which are administered internally, perhaps the safest, and altogether the best, is the pilula hydrargyri, or, as it is called from its colour, the blue pill; it consists of mercury triturated with confection of roses and powder of liquorice. This combination is given in doses, ordinarily, of four or five grains, sometimes, however, as large as ten grains, and these are given twice or three times in the course of the four-and-twenty hours. Another mode, and a very common one, of administering mercury internally, is in the form of calomel—the hydrargyri submuriatis of the London Pharmacopœia; one or two, sometimes even three or four grains in this form of the remedy, are administered two, three, or four times in the four-and-twenty hours. Now as calomel very frequently acts as a purgative, it is sometimes necessary, when administered for the purpose of influencing the system, to combine opium with it, to prevent its action on the bowels. A third of a grain, or half a grain of opium, may be combined with each dose of the calomel for this purpose, and frequently it is necessary to combine opium in the same manner with the blue pill, for although that does not so commonly act on the bowels, yet it sometimes does. Hydrargyrus cum creta, formed by triturating mercury with chalk, is a mild preparation of mercury. It is considerably less active than either of the two preceding forms, and therefore more mild. It is employed when we wish to administer mercury to children, or to individuals in whom other forms of mercury affect the bowels, or produce other bad effects; it is given in doses of from five to ten grains, and may be repeated in the course of the four-and-twenty hours. This is a form of the remedy, however, which is not employed when we waut to act powerfully on the system, or to do so in a short time. The oxymuriate of mercury, or corrosive sublimate, is another form that is employed in certain cases, but it is very powerful, and, indeed, even in small doses, it is a poisonous preparation. It has, however, been frequently used, and is so still, in minute doses in cases of syphilis. On account of its very active properties, it must be used in minute doses,

d its effects must be cautiously observed. We give some-
nes the sixteenth, or the eighth, or the fourth of a grain, two
three times a day; seldom, if ever, however, exceeding the
antity of one grain in twenty-four hours. This remedy was
troduced into general practice, in consequence of the high
comiums passed on it by Van Swieten, who employed it in
enna, and hence it has come to be very commonly used on
e Continent, much more so, indeed, than here. When I was
Paris, about ten years ago, I found that all the cases, whether
primary or secondary symptoms, at the Venereal Hospital,
ere treated by the corrosive sublimate in solution; one grain
the corrosive sublimate was used to an ounce of distilled
ater, and the quantity given was half a grain in the course of
e day—rather a large allowance. The remedy was carried
und when the attendant visited his patients, and it was
oured out in his presence, and drank before him, so that the
fect of it in this way, at least, was ascertained. But the
eneral mode of administering it is in milk, or in thin muci-
ge. The liquor hydrargyri oxymuriatis of the London Phar-
acopœia, contains half a grain of the corrosive sublimate to
n ounce of distilled water, so that one drachm of the solution
ontains one-sixteenth of a grain of the corrosive sublimate.
grain of the corrosive sublimate may be dissolved in an
unce of the tincture of bark, or tincture of rhubarb, and then
tea-spoonful, containing the eighth of a grain, may be taken
hree times a day. The red oxyde of mercury, formerly called
e mercurialis calcinatus, may be taken in doses of a grain
wice a day, or sometimes in doses of a grain and a half, when
t is intended to affect the system. This is rather a powerful
orm of the remedy, and very apt to affect the bowels, and as it
as no particular advantage attending its administration, it is
retty nearly discarded from practice in this country.

Now, mercury, like other medicines, affects different individuals in a very different manner, so that we cannot mention any definite dose that can be employed at all times. There are some persons in whom the smallest quantity, one or two grains of the blue pill, will produce salivation; there are others in whom you may rub in mercury, and to whom you may give calomel and blue pill in very large doses, without affecting the system. Hence it is necessary to proceed cautiously, and to watch the effect of the remedy. You cannot safely prescribe a dose, and let the patient go on repeating it for two or three days, because at the expiration of that period, you will find, probably, that a profuse salivation has taken place. You should inquire whether mercury, on its having been used at any former time, had speedily affected the bowels or produced salivation; and if it had, then you must give it still more cautiously. Frequently, when we wish to affect the system rapidly, in order to put a stop to complaints that are spreading destructively, we employ the remedy, both by means of friction, and internally; that is, we administer the blue pill, and rub in the ointment, until we produce a certain effect; and then, perhaps, the internal administration, or the external application alone, will keep up the action to the requisite extent. When mercury is given in moderate doses, it generally purges; and small doses of mercury, repeated from time to time, are given in consequence, to alter the state of the secretions in the alimentary canal; but it is not the purgative effect, nor the influence which it is thus capable of exerting on the secretions of the alimentary canal, that checks the progress of venereal disease. Mercury must be given in larger quantities for this. It must be repeated; its effects must often be continued for a considerable length of time, in order to bring about that change of the system, by which the progress of venereal disease is arrested. In truth, the action of the remedy as a purgative interferes with its influence on the system, and prevents the check which it is intended to give to venereal disease.

Mercury produces very considerable and very powerful effects on the animal economy. It generally increases the quickness of the pulse; and sometimes it produces a slight degree of what we may call feverishness. It augments some of the secretions, particularly that of the salivary glands; frequently those of the kidneys, and of the skin. And it will not only augment the secretion of the skin, but that secretion may become actually impregnated with the metal; so that articles of gold or silver that are worn near the person, undergo a partial alteration of the surface in consequence of it. A gold watch, for instance, may be turned quite white. The mercury produces a peculiar effect on the mouth. In the first place, it causes an unpleasant metallic, or coppery, taste, of which persons are particularly sensible in the morning; at the same time it produces a fœtor of the breath, so that persons who are taking mercury, and do not wish the fact should be known, must be careful not to approach too near those from whom they wish to conceal it. It then produces swelling, sponginess, inflammation, and a tender state of the gums, with looseness, and a very painful condition of the teeth, so that a person is unable to bite not only any hard substance, but even any thing that approaches at all to a state of solidity. The mucous covering of the mouth generally undergoes the same change as the gums. The mouth swells, and becomes very painful, and if the action of the remedy be continued, it causes ulceration of the mucous surface, a superficial abration, and the surface thus exposed assumes a greyish, or ash colour, as if it were covered by a superficial slough. Nay, further, in some individuals, portions of the mucous membrane actually slough, and slough too, sometimes, to a considerable depth. In conjunction with these effects of the mouth, there is an increased secretion of the salivary glands; and this constitutes salivation, or ptyalism. In this condition a person will spit a pint, or two, three, or four pints, in the four-and-twenty hours. The fluid which is thus discharged, is a ropy, slimy fluid, consisting principally of a mixture of the secretions of the salivary glands, with a mucous discharge from the mucous membrane. The effect which is thus produced upon the mouth, is considered a criterion of the general influence upon the system of the remedy on which we place our reliance for arresting and curing syphilis, and I believe it may very safely be regarded in that light. Often so long as no alteration is produced on the state of the mouth, we do not find the curative effect take place; and we generally find the curative influence proceed in proportion to the local effect observed in the mouth; we cannot, however, say that this is absolutely true in all cases. Other effects may be produced by the remedy, though this peculiar influence on the mouth may not take place to the extent I have mentioned; so that there are some cases in which syphilitic symptoms disappear, although mercury has not produced the usual effect on the mouth.

Now, at the time these various effects are produced by mercury on the system, we see a beneficial influence obviously produced on the syphilitic symptoms. Venereal ulceration is put a stop to, the restorative processes commence, and the ulceration heals. Lymph, which has been diffused from the iris into the anterior chamber, is absorbed; the swellings of the periosteum are dispersed; matter is frequently removed from buboes; pains of the bones and joints disappear; and eruptions of the skin fade away. Such are the changes we observe when the mercury acts decidedly on the disease. Now, we really find it difficult to reduce these several manifestations of the mercurial influence over syphilis to any one general principle. Indeed, when we survey them altogether, some of them seem contradictory. We observe that mercury has a powerful influence in producing absorption; that it will produce absorption of lymph from the iris, that it will produce absorption of the interstitial deposition which constitutes a node in the periosteum, and that it will produce absorption of matter from a bubo. In all these cases, we see its power in increasing the action of the absorbent vessels. But, on the other hand, we observe, that it arrests the action of those vessels in ulcers; that it puts a stop to that process of absorption which occasions the ulceration, and that it produces the deposition of the new matter which is necessary for repairing the breach produced by such ulceration.

It has been said that mercury cures syphilis by its specific power; that is, that the mercury is a specific for the removal of the disease; implying that its administration would invariably put a stop to the disease. If your inquiry be,—What is the specific power of mercury? the answer would be, To cure syphilis; so that here we are reasoning in a circle. Mr. Hunter says, that mercury produces irritation in the system, which irritation supersedes or destroys the irritation caused by the venereal disease. Now, for my own part, I cannot discern any thing more in that statement, than that mercury cures the pox. I believe we have not yet got much further than this in our attempts at an explanation. In order to produce that beneficial influence of mercury which we wish in cases of syphilis, it is necessary to give the remedy repeatedly, and to persevere in the employment of it for a considerable length of time; it is not one or two doses that will produce any effect; we must give the remedy several times, perhaps, in the course of the four-and-twenty hours, and we must persist in the use of it day after day, perhaps week after week, and even sometimes for months, before the requisite effect will be produced. We cannot say that the remedy is to be given repeatedly, exactly in the same doses during the whole of this time; we must watch the effects produced, and we shall find that we should sometimes diminish, and sometimes increase, the dose; sometimes leave it off, and then resume the use of it again, our object being to produce a certain effect on the system, and to keep that up for a certain length of time. When a person employs mercury in this way in the venereal disease, or indeed in any other complaint, the patient is said to go through a course of mercury; it is called a mercurial course.

Diet.—Now there are certain rules of diet and management to be observed, in order to ensure the favourable action of the remedy on the system. In the first place, we find that the effect of mercury is increased by warmth, and by keeping the individual in a regulated temperature. Hence it used to be considered a rule that the patient should remain in a warm room; that he should not go out and expose himself to the air while he was going through a course of mercury. There is so far a reason for this, that free exposure to the cold air lessens the effect of the mercury. If you wish then to produce the effect of mercury readily, and to its highest extent, you should keep the patient in a regulated temperature, and with warm clothing. We do not desire strictly to confine the patient to his chamber during a mercurial course—it is not necessary; but, as a matter of precaution, he should avoid cold and damp; we ought not to allow him to go out at night, but keep him warm and well clothed; and, under certain circumstances, he should be confined to his room, but this confinement is not to be considered as a general rule. The diet of the patient should consist of milk, bread, and other farinaceous articles. When the mouth begins to be affected, the patient is unable to take any food of a solid kind, therefore the articles I have mentioned must, almost of necessity, constitute the diet; there is, too, a feverish state of the system produced sometimes, in which animal food and fermented liquors would be very improper. On account of the disposition of the mercury, whether employed externally, or internally, to affect the bowels, it is necessary to avoid certain kinds of food that would favour that tendency; thus, a patient should not take acids, nor eat salads, pickles, nor unripe fruit, nor undressed vegetables. There are some instances in which mercury is administered to patients who are already in a considerably reduced state of health, and in whom it is expedient to sustain the general strength of the system, at the same time that we avail ourselves of the power of mercury to check the specific disease. Under such circumstances it is necessary to give the patient a nutritious, and rather a generous diet at the time of using the mercury; therefore good soups, strong broth, some small quantity of fermented liquors, good porter or ale, or even wine and water, may occasionally be allowed under these circumstances.

Salivation.—The effect of mercury often proceeds further than we wish; and, indeed, in many instances, the remedy acts prejudicially on the system. It produces effects which are in themselves almost a disease, sometimes we may say disease of a serious kind, and such as to require prompt treatment. Sometimes the remedy acts very seriously on the mouth, producing excessive salivation; and I do not know a more deplorable condition than that of an individual in whom this excessive ptyalism takes place. The tongue becomes swollen, excessively sore, excoriated on the surface and edges, and it presses against the teeth on each side, so that indentations of the teeth are observed on the margins of the organ. Sometimes it is so much swollen that it actually protrudes from the mouth. The nose and the lips are enormously swelled, and the whole face and head sometimes participate in the tumefaction. The mucous membrane of the lips, cheeks, and throat, becomes inflamed, excoriated, sloughy, and most excessively tender.

There is at the same time a constant and profuse fœtid discharge of saliva from the mouth. This continues to run night and day, and almost prevents the patient from taking his rest. The quantity frequently exceeds what I have already mentioned; a pint or a quart of saliva will flow from the mouth in a comparatively short time. The ulceration of the gums, the looseness, and painful state of the teeth in their sockets, become more considerable. The gums slough, the alveoli perish, and the teeth themselves fall out. I recollect seeing a gentleman who came from the East Indies, who had been in the army at Rangoon, and who had there contracted a fever, for which it was necessary to give him mercury very freely. Under the employment of this medicine his head swelled, and salivation came on. He embarked for England with very little appearance of his living to reach this country. He however survived the voyage, and I saw him when he arrived in town, at which time his lips, gums, and all parts thereabouts, were enormously swelled. He could not open his mouth at all; and there was a quantity of the most horrible discharge continually flowing from his mouth that I ever beheld; indeed it was so great, that he scented that part of the ship in which he resided to such an extent, that nobody could go near it during the voyage. When I came to examine the mouth, I found that the teeth were all loose and shaking, and, in fact, that the whole thirty-two would come out, sixteen from each jaw, and then the whole alveolar processes came away! So that he lost the whole of his teeth, and the alveolar processes; and besides that, in consequence of the sloughing, the insides of the cheeks became adherent to the surfaces of the gums, so that he had but a very limited power remaining of moving the lower jaw.

Salivation, if properly managed, is not at all dangerous to life, though sometimes it almost entirely prevents a person from taking food during a short period, and now and then impedes articulation. Now, unfortunately, when excessive salivation does occur, there is no direct or speedy remedy for this very painful and distressing state. It will require two, three, or four weeks for the affection gradually to subside, and we cannot, perhaps, very materially accelerate the disappearance of the symptoms. I have mentioned to you that a warm and uniform temperature promotes the action of mercury; in the same way free exposure to cold diminishes it; so that when a person labours under that state, he ought to go out in the air without any covering about the face. People wrap themselves up, and think it necessary to tie up the mouth in order to exclude the air. On the contrary, they should go out and keep themselves cool. Saline purgatives should be given to keep the bowels open. When mercury acts on the bowels, its action is less on the mouth. Locally the patient may employ lotions of alum, or the tincture of myrrh in the infusion of roses, in order to cleanse the mouth from those offensive secretions, and keep it in some degree comfortable. When the swelling has a little subsided, so that we can observe the extensive masses of sloughs called superficial sloughs, of the mucous membrane, we shall find that the painful state of those sloughs will he greatly diminished by touching them with the linimentum eruginis of the London pharmacopœia. This is a very active remedy; it is of a poisonous nature, and therefore requires cautious use. Roll a piece of lint round a probe, dip it into the liniment, and thoroughly soak the parts I have mentioned with it; let it remain for a minute or two upon them, and then let the patient take some luke-warm water, and wash it out of his mouth; for if a small portion of this liniment were introduced into the stomach, it would produce rather a serious effect on that organ. A pretty strong solution of the nitrate of silver may be employed for the same purpose. In this way the effects produced by excessive salivation, will gradually subside, but I do not know of any mode of putting a stop to them quickly.

Action of Mercury on the Bowels.—Mercury very frequently acts unfavourably on the bowels, producing pain, griping, purging, tenesmus, and mucous evacuations; that is, it produces generally a set of dysenteric symptoms. In order to put a stop to those symptoms, you must discontinue for a time, the administration of the remedy, and give the patient opium, the tinctura opii, in chalk mixture. A dose of rhubarb, and some of the pulvis creta cum opio, will diminish the irritation of the bowels, and relieve the patient. When you resume the use of mercury, you must cautiously administer opium with it, to prevent these effects. Very frequently, by the proper combination of opium with it, you preclude these effects on the bowels, although, if you give mercury simply, the same symptoms would recur.

Action of Mercury on the Skin.—Sometimes mercury produces a peculiar inflammation of the skin, which has been called by Dr. Bateman *eczema mercuriale*—*e-c z-e-m-a*—a Greek word, I believe, meaning to boil over. The skin becomes inflamed in patches, and very minute vesicles form upon it, as thickly set together as possible. These, at first, are hardly visible, as their contents are transparent; but they burst, and discharge a matter which encrusts on the surface of the skin, the parts themselves remaining raw and tender, after the discharge has taken place. Considerable quantities of matter thus exude from the skin, and becoming encrusted, renders the skin hard and uncomfortable. Fresh patches of the skin become inflamed, and go through the same process. Thus, frequently this peculiar inflammation of the skin—this *eczema*, or what some call *erythema mercuriale*, extends over the whole surface of the body. The affection is a painful one, for it is attended with considerable inflammation of the skin; and the dry crusts which are formed on the surface—the exudation of matter—and the stiff state of the linen produced by this discharge, which is usually of a fœtid odour, renders the patient subject to irritation over the whole surface of the body. Now this goes through a certain course; it gradually subsides, and comes to an end, but it is productive of very great pain and distress, and even of high constitutional irritation, during its continuance. Its occurrence seems owing to some peculiarity in the constitution of the individual, for it will take place without a large quantity of mercury having been employed; it will take place either under the use of the remedy by friction, or by its use internally. Sometimes it takes place on the part where the mercury has been rubbed in, and thence extends over the surface of the body; but it will be equally produced by its internal employment even in moderate doses. When a person is subject to it, it becomes really so serious as to preclude the use of the remedy, unless it be imperiously required. No person would think of using mercury in an individual who had been the subject of erythema mercuriale, except under the most urgent circumstances.

This affection admits of little more than palliative treatment. Soothing and mild local applications should be employed. The surface may be washed, and gently cleaned by means of emollient, or slightly mucilaginous, fluids; milk and water, the decoction of linseed, and thin gruel. The parts, which are particularly sore and inflamed, may be covered with a bread-and-water poultice. Mild, unctuous applications may be employed, after the inflammatory process has gone off, to detach the crusts that are formed on the body. Aperient medicines, of course, should be given; slight salines, with antimony, mild sudorific remedies, and the complaint, under such treatment, will slowly decline.

Poisonous Effects of Mercury on the System.—Mercury frequently seems to act as a kind of poison on the system. It will produce a quickness and feeble state of the pulse, it will cause loss of flesh, loss of appetite, sallowness of countenance, restlessness at night—in fact, a state a good deal like what we should call hectic fever. Sometimes it goes further than this, and has a peculiar influence in disturbing the action of the heart and respiratory organs. It causes a sense of oppression about the præcordia, an irregular action of the heart, a slow and frequently intermittent pulse, general coldness of the surface, a paleness and contorted state of the countenance. These symptoms were particularly described by the late Mr. Pearson, who has devoted a chapter to them—chapter the twelfth, in his work entitled "Observations on some Articles in the Materia Medica for the Treatment of Syphilis." He calls this state erethismus:—erethismus is a Greek word, something equivalent to irritation. He says, that at the Lock Hospital, of which he was surgeon, he had observed that, occasionally, persons died suddenly, without having been previously ill, or without his being able to ascribe the death to any particular cause. He was hence led to pay particular attention to persons who were under a mercurial course; and he found that symptoms such as I have described were occasionally produced; and that, in this depressed condition of the circulation and of the general powers, a slight degree of exertion, such as walking across the ward, would suddenly prove fatal. I myself once saw a very marked instance of this kind. It occurred in the person of a physician, who is well known by his works—I mean the late Dr. Bateman. He took mercury in consequence of an amaurotic affection; he was of a delicate nature, and this peculiar effect upon the heart and respiratory organs was produced in him in a very extensive and alarming degree; so much so, indeed, as to bring him to a state of great danger. Although the mercury had not acted seriously on the mouth, nor produced sores, the action of the heart became so irregular, and the action of the respiratory organs was so interrupted, that, for five or six weeks, his life was in the greatest danger.

Mr. Pearson observes, that the best remedies in this affection are, first, free exposure to the air; secondly, medicines of a cordial or stimulating kind, and a good generous diet, animal food, wine, and other fermented liquors. These seem obviously calculated to rouse the drooping powers of the circulating system, and the whole of the animal economy. In point of fact, he says, that such means are found to be the best calculated to remove the symptoms I have mentioned. I recollect that, in the case of Dr. Bateman, the person whom I have just mentioned, although he was very little given to the use of fermented liquors, he found it necessary to take wine, and even brandy, also jellies, and animal food even in a concentrated state. When such symptoms appear to be coming on, the exhibition of volatile alkali, with the camphor mixture, I believe to be the best remedy, and, of course, the employment of mercury is immediately to be discontinued; and supposing the patient be in an hospital, he must be removed from the mercurial atmosphere. In the state of system produced by the action of mercury, some persons appear to be particularly disposed to rheumatic affections. Where there is peculiar rheumatic disposition, we frequently find persons complaining of pains of the joints, of the limbs, and the bones; and we do occasionally see actual swellings of the joints, which we have every reason to ascribe to the effect of the mercury. It would seem, therefore, that in those who have a disposition to rheumatism, mercury would call the affection into action; and hence the necessity of weighing all the effects of the remedy, in order to prevent prejudicial actions of this kind.

To this catalogue of evils, produced by the employment of mercury, some persons are inclined to add very considerably. In fact, among the prejudicial effects of the remedy, are enumerated, by those who are unfavourable to its use, eruptions, iritis, affections of the nose, affections of the bones, and affections of the joints, that is, a considerable portion of those symptoms which we know as secondary symptoms of syphilis. It has been contended by those, who in modern times have been the great advocates for the treatment of syphilis without mercury, that a great portion of those symptoms ordinarily described as secondary, are really owing to the action of the remedies employed to counteract the syphilis. Now, in the first place, we may observe, that all these symptoms may be produced without the employment of mercury. We know, perfectly well, that each of them is seen in individuals who have taken no mercury at all. We have, therefore, clear evidence that all these effects may be produced by the disease. We have not the same evidence that they may be produced, on the contrary, by the employment of mercury. Mercury is given in many cases, besides those of syphilis: it is given to a very considerable extent in other cases; but in no instance, where it is given in other diseases, do we find it produce eruptions, like syphilitic eruptions; in no such instance do we find it produce iritis, swelling of the nose, or of the bones, or of the periosteum. The effects, then, in question, can be produced by pox without mercury, but we have not the same evidence that they can be produced by mercury without pox. Now, it is true, that mercury and pox, acting together, may produce a something that neither would produce singly. I readily admit that the injudicious use of mercury, and the repeated employment of it in cases in which it ought not to be employed, may act prejudicially on the system, and that a perseverance in the use of it, where it exerts some of its noxious influences, may aggravate the symptoms of syphilis—may tend to make them return more easily—and may make them more difficult to cure. Thus, I think, there can be no difficulty in admitting—that the employment of mercury, under such circumstances, may increase the difficulties which belong to the disease itself. I cannot, however, myself, at present see any evidence that mercury is capable of producing these symptoms, which we are in the habit of witnessing as the effects of syphilitic poison, where no mercury has been used; and certainly there are injurious effects enough arising from mercury, without adding those that do not belong to it. In fact, all we want is a knowledge of the truth—to know what the remedy is capable of effecting, and what it is not—to understand what advantages and what disadvantages it may produce on the system, and not to carry our notions of it beyond what is legitimate; for the remedy, undoubtedly, is a valuable one, and we might be led by incorrect notions to reject its influence in cases where it would be really of service. A consideration simply of those prejudicial effects of the remedy, would, of course, naturally lead us to restrict the employment of it to cases in which we deem it *absolutely necessary*, and also to endeavour to procure the effect we wish by as small a portion as can be used.

This naturally leads to two questions, first, whether a slight degree of action of the mercury on the mouth, may be considered a proof that it has produced all the effect necessary for the removal of the venereal disease, or whether a more considerable effect is necessary generally, or in particular cases? It has been much the habit in modern times to produce a sensible effect on the mouth, and then to discontinue the mercury, under a notion, that when the mouth is affected at all, the system has experienced a sufficient influence for the removal of the disease. I cannot coincide with this opinion. In a great number of instances, a slight effect of mercury on the mouth is sufficient; but there are instances in which that slight effect does not remove the symptoms, and in which, when the remedy is carried further, so as to produce a more considerable influence, the symptoms give way. In fact, I think, we never see the symptoms of syphilis yield so rapidly, and so favourably, as in certain cases where the remedy, perhaps without our wishing it, has produced a pretty profuse salivation. Under these circumstances, we may notice a sudden and rapid amelioration of the symptoms, which we are not in the habit of seeing when the mouth is affected in a slighter degree only. Another question immediately connected with the same point, is, how long the remedy should be continued? Is it sufficient to destroy the venereal character of a sore, and to produce the healthy process of restoration? Would you leave it off, then, and leave the cicatrisation to form of itself? May you discontinue the use of the mercury the moment the cicatrisation is complete? or should you try to secure the patient from the occurrence of secondary symptoms, by proceeding with the employment of the remedy after that? These are important questions, and we have not, perhaps, the means of answering them satisfactorily. With respect to the first, however, it is certainly not safe to discontinue the use of the mercury before the sore is cicatrised all over. Then, secondly, is any good produced by continuing the use of the mercury after the cicatrisation is complete, with a view of preventing a return of the symptoms? This is a very important question, and if you refer to the best writers on the subject, you will find but very little to assist you. Mr. Hunter's observations on this point are very confused and contradictory; sometimes, he says, you may discontinue the use of the remedy as soon as the local symptoms have disappeared; in other parts, he says, he thinks the further use of mercury will "protect the constitution," to use his own phrase: you will, in fact, get no clear evidence from him. General experience, however, has led to a belief that perseverance in the use of mercury for some time, say a week, ten days, or a fortnight after cicatrisation, has a beneficial effect in protecting the constitution; so that persons, when they have used mercury to the extent I have mentioned, are not in the habit of suddenly discontinuing it, but of carrying it on for a short time after the apparent removal of the disease, under a belief that its continuance tends to prevent the recurrence of further evil.

LECTURE XXV.

Treatment of Venereal Disease continued—Sarsaparilla, &c.—Chancre; its Varieties—Herpes Preputii; other Affections of the Prepuce—Treatment of Chancre.

Employment of Sarsaparilla.—Other remedies, besides mercury, are supposed to possess anti-syphilitic properties—powers of arresting and of curing the venereal disease. Perhaps the foremost among them is sarsaparilla—the root of sarsaparilla; and this remedy is administered in the forms of powder, extract, and simple decoction; that is, of decoction, consisting of the roots of sarsaparilla only, or of compound decoction. In the latter form, which is perhaps the most frequently administered, the sarsaparilla is combined with some other vegetable remedies; that is, guaiacum, sassafras, and mezereon. This compound decoction of sarsaparilla is nearly similar to the "Lisbon diet drink"—*decoctum lusitanicum.*

Now, the most opposite opinions have been entertained in the profession respecting the remedial properties of sarsaparilla. Cullen, in his "Materia Medica," seems to doubt whether he should give this remedy a place at all in his system:—"If I were to consult my own experience alone, (says he,) I should not give this root a place in the Materia Medica; for I have tried it in every shape, and never found it an efficacious medicine in syphilis, or any other disease." But other persons, and those of great experience, place great confidence in the virtues of sarsaparilla, and administer it very frequently, considering it as a remedy of the greatest efficacy in various forms of syphilis and other diseases.

It appears to me, in the first place, that we cannot ascribe to sarsaparilla the same anti-syphilitic property—that is, the same power of arresting or curing the venereal disease, that experience warrants us in reposing in mercury. If we take a decided form of syphilitic disease, we do not often see that the employment of sarsaparilla alone is capable of putting a stop to the disease. The circumstances under which sarsaparilla seems to be of use are particularly where the constitution is enfeebled, either by the long continuance and the repeated attacks of the disease in various textures of the body, or by the repeated courses of mercury that are employed (and sometimes we may say, perhaps injudiciously employed,) for them:—that is, in short, where the general powers of the system are considerably enfeebled—where there is loss of flesh and loss of strength; it is in these cases that sarsaparilla is of particular efficacy, although we also give it in certain forms of the disease which are of a painful and intractable kind, and where we do not deem it fit to use mercury.

Now you will naturally make the inquiry, how sarsaparilla acts—what is the mode in which it exerts an influence upon the system, and what are the properties in it which are capable of producing these beneficial effects? And I must own that it is very difficult to answer that question. A healthy person may take two or three pints of the compound decoction of sarsaparilla, and experience no effect from it whatever—it seems to exert no sensible influence on the animal economy. We do, however, see that patients, under circumstances of alarming indisposition, recover, and that speedily, under the exhibition of this remedy; and therefore, although we cannot absolutely point out the mode in which the medicine operates, we are not justified in withdrawing our confidence from its powers. It is enough for us, in medical science, to know that a certain thing takes place in point of fact. We are, in many cases, unable to distinguish the *modus operandi*—that is, the manner in which the beneficial influence is produced. It is rather singular in the case of sarsaparilla, that physicians have no confidence in it, and that surgeons have a great deal of faith in it; because, in general, speaking of faith in the sense in which it is adopted with respect to the efficacy of articles in the "Materia Medica," I think that of physicians rather exceeds that of surgeons; however, certainly the reverse is the case as to sarsaparilla.

Sarsaparilla is frequently given in the venereal disease in conjunction with mercury, as with blue pill, calomel, or the oxymuriate. Under such circumstances, however, we cannot be confident of the virtues of sarsaparilla, because the good we ascribe to it may possibly be accomplished by the mercury. Sarsaparilla is frequently given at the conclusion of long mercurial courses, where the patient is considerably worn out by the duration of the disease, and the unfavourable influence upon the system of the treatment that has been instituted for it. Here, perhaps, the discontinuancee of the cause that kept up the disease—that is the mercury—may have as much influence in bringing the patient to a state of health, as the exhibition of the remedy in question.

Respecting the virtues of other substances supposed to be anti-syphilitic—for example, the guaiacum, sassafras, opium, cicuta, mineral acids, and so on, I need say nothing at present; because, although they have been brought forward to the public with considerable confidence as possessing powers over the venereal disease, general experience has shown that they are merely capable of producing slight effects under certain states incidental to the disease, just as they might in other complaints; that is, they possess no peculiar power in controlling or obviating the effects of the venereal virus; and respecting all these substances, I may refer you to the work of Mr. Pearson, which I have already alluded to, I mean his observations on the effects of various articles in the "Materia Medica" in the treatment of venereal diseases.

Now the attention of medical men has been so much attracted by what we may call the specific character of syphilis—their minds have been so much turned to those peculiar circumstances by which syphilis is distinguished from common disease, and they have directed their endeavours so much to the discovery of something that should counteract this specific effect (that is, to find out something that should be a "specific" remedy for the disease), that they have paid less attention than probably they ought to have done to those characters which the various forms of syphilis possess in common with other diseases. Supposing we put out of the question altogether, the notion of the specific nature—the peculiar properties of the poison which the venereal disease produces, what do we see in the various symptoms that are described as constituting syphilis? We find inflammation of various textures of the body, mortification, ulceration of various characters, interstitial deposition producing enlargements, feverish disturbance of the constitution, great sufferings, emaciation, and hectic fever. Now if we were to regard these symptoms without turning our minds to the peculiar or specific nature of the cause that produces them, we should immediately say in the early stage of the disease, during the inflammatory indisposition it exhibits, that the antiphlogistic treatment—often bloodletting, would be proper. We should employ those means which we consider capable of producing absorption of interstitial depositions: where there is great suffering we should use soothing narcotic means; and we should employ in that stage—where the powers of the constitution are reduced—where loss of flesh has taken place—and where there is a hectic condition, such means as are capable of restoring the general health. These are the means we should employ, if we regarded syphilis as inflammatory merely; and I can have no difficulty in stating to you that such means may be employed with as much reliance on their efficacy in syphilitic disease, as in similar affections of the system from any other cause.

Now, reduced diet is necessary for the inflammatory period of syphilitic disease. Persons must abstain from fermented liquors and solid animal food; they must take a mild and simple diet. This is a point to be particularly attended to in the treatment of the venereal disease. In some parts of the Continent, as in Germany, one plan they pursue, as an essential part of the treatment, is what they call *hunger-cur*—that is, hunger cure—cure by starvation—the employment of a very reduced diet. An account has been published of the treatment of cases in the Venereal Hospital at Paris, in which the efficacy of the vegetable or reduced diet is strikingly seen as contrasted with the employment of stimulating or animal regimen. Of 1312 cases (including both primary and secondary symptoms,) treated in the Hôpital-Val de Grace, at Paris, from April 1825, to July 1827, some were treated with mercury, and some without. Some had animal diet, the others vegetable and mild diet—the *régime végétal et adoucissant* of the French. Putting the other treatment out of the question, the average duration of the cases on meat diet was fifty-five days, that of those on vegetable diet, thirty-three days. So that you observe that the difference from the employment of a mild vegetable diet, and a stimulating animal diet, without reference to other points of treatment, made a difference in the general duration of those cases, of twenty-two days; those on animal diet occupied, on an average, fifty-five days, and those on vegetable diet only thirty-three days.

Primary Sores or Chancres.—I proceed to state to you my observations on the primary syphilitic sores or chancres, as they are called. Now the word chancre denotes the acrid, or eating, or ulcerative quality of those sores. It is rather an equivocal term, and it is therefore, best, perhaps, to employ it as little as we can help. The expression—primary sore, would answer the purpose for the word chancre, because chancre is supposed to be a syphilitic sore, one possessing venereal properties; and as among the ulcerations incidental to the whole frame, there are several that do not possess these properties, it is supposed, when we speak of chancre, that there is a peculiar poison in the case. Now, as we cannot, in a great variety of cases, know whether any such poison has been communicated or not, it is better to employ that term as little as we can help. Primary sores then appear, chiefly, on the external organs of generation of the two sexes; most commonly on those parts covered by a thin and delicate membrane, such as the glans penis, or lining of the prepuce, in the male; on the various parts included between the labia pudendi, covered by a thin skin, in the female. These are the most frequent seats of primary syphilitic ulceration. Such sores may come, and they are not uncommon, on the external parts of the organs of generation which are covered by common cuticle, as on the external skin of the prepuce, of the penis, or on the labia pudendi. Now, they may also come on the smooth surface of mucous membrane, but they are much less common in those parts than in other places. Syphilitic sores, it is true, do show themselves within the urethra of the male, and within the orifice of the vagina of the female; but they are uncommon in both of these situations. They are generally produced by the application of the poisonous, or infectious, secretion to the external and unbroken surface of the part; they may be produced, too, by the application of such secretion to the surface of a recent wound, or of an open ulcer. In the latter way they are occasionallyproduced on the fingers and on the nipples. With respect to the latter, I am not exactly certain whether it is necessary there should be any actual excoriation, or breach of surface, in order to produce that consequence of the affection which takes place when a healthy woman suckles a diseased child; but in the case of the reception of venereal poison through the fingers, we only see it take place where there has been some external wound, or breach of surface, from a previous cause; at least I know of no instance within my own experience where a primary venereal sore has taken place on any part of the fingers or hand, when the cuticle has remained unbroken. But within no very long time I have seen four cases, in which the venereal poison has been absorbed through the medium of wounds on the finger or thumb. A gentleman called on me one day, saying he had got a painful affection of the thumb, and that it had arisen from a gnat-bite. He opened his arm, and I found a very serious inflammation going on of the subcutaneous textures of the forearm and arm. He then uncovered the thumb, where I saw a nasty, foul sore, about the size of a shilling, in the situation of the first joint of the thumb, with considerable swelling and redness of the part. I asked him how this had happened. He said he had received a gnat-bite on the thumb, which had festered, and then, getting worse, the arm had inflamed to the extent to which I saw it. I looked at it attentively, and it appeared to me to be much more serious than any thing I had ever seen to arise from a gnat-bite. I told him I never saw such an effect produced by a gnat-bite, and that I thought something else must have taken place. I must observe, that he was a very free liver, and indulged much in the pleasures of the table, consequently he was an individual who might have suffered as much from the bite of a gnat as any person could have done; but this was certainly past any thing I had ever seen produced by such a cause; there was a very foul, nasty sore, with high inflammation of the limb, assuming very much the character of phlegmonous erysipelas both of the forearm and arm. He then said that something else had occurred to him, which, however, he considered could have had nothing to do with the present state of his hand; in truth, that he had been dining with some friends in the city, and that on his return along the Strand, he had got into conversation with a damsel, and had been silly enough to put his hand under her petticoats, but that he had really done nothing else to her. When he got home, he said, he found that his hand smelled very badly, and he therefore immediately took means for cleansing it; he resorted to abundant ablution to get rid of the smell; that, in fact, from that time, the thumb had had something the matter with it, and that either from the gnat-bite, or something else, it had got worse and worse; in fact, it was very clear that a syphilitic poison had been absorbed by the wound, and that this was the result. The first thing, therefore, to be done in this case, was to reduce the inflammation. I accordingly ordered the application of a large number of leeches, and directed other suitable means to be employed, and that he should keep quiet. I did not see him again for three or four days, because he was not regularly under my care. However, he had got rid of much of the inflammation of the arm and forearm although not all of it, but the state of the thumb was not at all amended. I directed the black wash to be applied, and that he should take blue pill, five grains three times a day. He went on with this for a few days, but it had no effect on the system, and the sore became rather worse. I then deemed it necessary to employ the medicine in very large doses; I gave him calomel and opium largely, and he was violently salivated; the sore then put on a healthy appearance and proceeded rapidly to heal. As I have said, he was not regularly under my care, and he discontinued the use of the mercury before he had been completely cured; the consequence was, that the sore went into an unhealthy state again, and he was under the necessity of going through a salivation a second time; by this, however, he was cured.

Not long ago, a surgeon, of whom I previously knew nothing, wrote to me from the country, stating a similar case; he had got a sore on his thumb, or on one of his fingers, I do not recollect which. He had delivered a poor woman of a child in the town where he lived, having had a good deal to do among the poorer classes of society from a connexion with the parish workhouse. Finding a sore had been produced on the finger or thumb, by inoculation, as he thought, and that it was becoming very bad, he was induced to examine the woman, when he found that she had got venereal ulcers. The sore increased rapidly, and it spread into a very nasty, foul ulcer. He wrote to consult me on it, stating these circumstances, and begging to know what I thought of it. I wrote to him, saying, that I had no doubt he had imbibed the venereal poison, and I recommended him to use mercury very freely. He came to town soon afterwards, and I saw him; he looked very sallow, pale, and ill. He showed me the thumb or finger, which was much swelled, of a bright red colour, with a large foul sore upon it. He said he had suffered much on his journey to London. He began to take mercury as soon as I wrote to him, but it had not acted on the system; he thought, however, that the progress of the sore had been checked by it, but he had suffered in coming to town by another cause—he had had an attack of the piles, which came on just before he left the country, and had been very painful in the coach during his journey. I asked him if he had ever had piles before; he said no. I thought it was very strange that he should have experienced a severe attack of piles just at that moment, as he had never suffered from them before; but he said he was sure such was the fact, because he had shown them to a surgeon in the town where he lived, who had said they were piles, and applied caustic to them. I requested him to let me look at them, and I found that he had got a set of venereal ulcers about the fissure of the anus; in fact, that the whole external integuments around the anus were a set of chapped and ulcerated sores, extremely inflamed and painful; in short, a set of secondary venereal ulcerations proceeding from this primary sore on the hand. As soon as he arrived in town, I made him confine himself to the house, put him on a very active mercurial course, got his mouth affected very rapidly, and, as soon as that was the case, the ulcers both of the thumb and the anus healed; he got well, and went back into the country in about three weeks. I have heard nothing of him since, and I suppose he has continued well. I saw another medical gentleman, who had been in the habit of attending a great many low women in the country, and he had a sore on the hand, which no doubt was syphilitic; he had both a swelling and sore—swelling of the axillary glands, and a scaly eruption spread over the whole body; these were suddenly stopped when mercury was employed. I say, therefore, that these diseases may be acquired by other means than sexual intercourse; and it is a matter of great consequence to a surgeon who has to examine patients labouring under syphilitic diseases, or who has to handle the genital organs of females who may be so affected, to take great care that he does not allow any of the discharge to come upon a recent wound. I may mention, that Delpech, in his Observations on the Treatment of Venereal Diseases, mentions the case of a surgeon who contracted a sore on his fore-finger in this way, from handling the ulcerated fissures of the anus of a patient. Some of the moisture produced from those ulcerated fissures came in contact with his finger, which had been previously hurt; itching and pain immediately ensued; ulceration of the wound and swelling of its circumference took place on the next day; swelling of the glands, eruptions over the whole body, disease of the bones of the nose, and other parts, were the consequence; and Delpech says, that the patient did not recover until after six years of suffering and treatment.

The application of the venereal poison does not produce its effect immediately; some interval of time takes place, as in small-pox, cow-pox, and hydrophobia. Syphilitic sores seldom appear in less than five or six days, or a week after coition. I have known the interval between coition and the appearance of the symptoms to be as much as four or even five weeks. Mr. Hunter states that he has known a syphilitic sore to commence in twenty-four hours after coition, and that he has known it to be delayed as long as seven weeks; he mentions one instance in which the interval was two months. Where the poison is applied to broken surfaces, as in the cases I have mentioned, the symptoms come on very much more rapidly. In those cases a very painful state of the wound was experienced in a few hours after the poison had been applied; and, certainly within twenty-four hours, decided appearance of syphilitic sores was manifest. The syphilitic sore shows itself at first in the form of a pimple, or minute vesicle or pustule, that ulcerates and spreads by the ulcerative process. Generally speaking, the process of ulceration in a syphilitic sore is not very rapid; it is rather a chronic kind of ulceration, though there is considerable difference in the various kinds of sores which belong to this disease. Usually speaking, the syphilitic sore is of a circular figure, but not necessarily so. The sores which are produced by the application of venereal poison to the external organs of generation are various in their appearance. We cannot describe one particular character of sore as the result of venereal poison. We find that there are several, all of them seeming to be equally produced by that cause, and yet differing materially from each other in their characters. In the first place, the simple venereal sore, which has been called by Mr. Evans, in his work to which I have before referred, *venerea vulgaris*—common venereal ulcerative sore, is a superficial ulceration, taking place, very commonly, on the internal surface of the prepuce. Usually there is more than one; you have generally a sore upon the corona glandis; frequently two, three, or four of them in that situation, just behind the prepuce; or such a number may form around the orifice of the prepuce itself. In the first place there is a degree of excoriation from ulcerative absorption; after a certain time, the excoriation thus produced is filled up, so that the sore becomes again level with the rest of the surface. The continuation of the reproductive process goes on and produces an excess of substance in that particular part, so that it projects above the surrounding surface, and then the part cicatrises. These are the stages this sore goes through, and it will often occupy four, five, or six weeks in proceeding through the different stages. It is also very painful, and, commonly, the surface bleeds when the dressings are changed and the part is exposed. Venereal sores frequently occur on the frænum of the prepuce; indeed there is a kind of fold of the prepuce upon the glans, in which matter may easily lodge, so that we are not surpised that this should often be the seat of venereal ulceration. When it takes place there, it very commonly penetrates through the frænum, and tends to destryoy it. The ulcerative process, at times, extends quite through it, forming ulcerative fissures. These altogether may be considered as ordinary common syphilitic ulcerations; they are, perhaps, the most frequent form of the affection. There is a venereal sore in which the margin of the ulceration is elevated, and a little indurated; it is a syphilitic sore within the edge, forming just at the reflection of the prepuce, over the corona glandis. Frequently this kind of sore is seen on the external surface of the prepuce, or penis; there is a roundish kind of margin; the surface of the sore itself has something in it of a peculiar character, and the discharge from it is scanty in quantity; it bursts, and forms a thin scab. Thirdly, there is the indurated chancre, that is, a venereal ulceration taking place on an indurated basis, so that the margins of the sore, and the basis on which it is formed, present an unnatural hardness. Mr. Hunter, in his account of chancre, or primary venereal sores, says the basis is generally hardened; and hence, in consequence of the description he has given, many surgeons have entertained the opinion, that a hardened basis and edges are essential to the character of a true syphilitic sore. Now, if we take all the primary syphilitic sores that we meet with into view, we find that the greater portion of them do not possess this character of hardened basis or edge; they are not indurated sores; that character is only exhibited in a certain proportion of the primary sores. Yet, in consequence of Mr. Hunter's having given this description, some have considered that a true syphilitic sore must have this hardened basis and edge, and that those which do not possess that character are not true venereal ulcers. They have even gone further than this, for seeing not only that a great variety of primary sores do not possess this character of induration, and seeing the progress of syphilitic disease in other points deviate considerably from what Mr. Hunter has laid down, they have drawn the inference that the character of the disease itself has changed since Mr. Hunter's time; that syphilis, in fact, is now a different kind of disease, in many essential points, to what it was when Mr. Hunter wrote. Now, I cannot say that, for my own part, I can adopt this conclusion. I think it much more probable that Mr. Hunter should have been mistaken, or inaccurate, than that the nature of the disease should have changed. If we look back to the description of disease, of whatever character, as given in the most ancient times, we find all the descriptions agree very much with what we observe now. We have no reason to say that nature has changed in any essential point in this disease any more than it has changed in any other. I cannot help calling to mind the short but pithy remark of a great critic of antiquity—

> "Opinionum commenta delet dies,
> Naturæ judicia confirmat."

That is—

> "Time destroys the fictions of opinion,
> But confirms the decisions of nature."

Now, when I see the fanciful speculations, and the contradictory statements and views which make up so large a part of Mr. Hunter's treatise on this disease, I cannot help classing it among the "*opinionum commenta.*" I am sure it does not belong to the "*naturæ judicia.*"

The induration which accompanies venereal sores is of different kinds. In the first place, there may be a small and moderate induration; there may be a considerable mass of hardness, presenting a cartilaginous character, so that when you feel the part under your finger, it seems as if you were feeling a bit of cartilage, and the ulceration is seated upon that indurated part; sometimes it happens that this cartilaginous induration remains after the healing of the ulceration; and, sometimes, such an induration will take place at a remote period, after the cessation of the symptoms, without ulceration; it will come on as a kind of secondary appearance. I saw a gentleman who had previously had two or three small sores which healed, under the moderate use of mercury, in three weeks. In three weeks more, without any fresh infection, an ulceration, with induration, formed at the basis of the prepuce; the induration was equal in size to a horsebean; the ulceration was about equal to the size of a split pea. He took blue pill, and applied mercurial ointment; the sore was healed in a fortnight; the induration was reduced to a third in a month, and had disappeared entirely in another month. This happened about two years ago, and the gentleman has continued well since. I remember the case of a medical gentleman who consulted me for obstinate venereal sores which healed, and after they healed he married. In a year afterwards, a large hard lump (equal to the size of the last joint of the little finger), of a bright-red colour, came on the prepuce, with a few scaly eruptions on the head; they were secondary symptoms, and were permanently cured by mercury. It is not uncommon to see indurations of that kind come on at rather a remote period after the occurrence of the primary syphilitic symptoms.

The fourth kind of ulceration I have to mention to you is the phagedenic primary sore, a primary sore presenting those characters which I have already had occasion to mention to you in speaking of phagedenic ulcerations; that is, the removal of a part by ulcerative absorption. The part has a sharp edge, is sometimes undermined, and the surface is irregular and ragged; there is an eating away, as the term implies, of the textures of the part; there is no formation of granulations; there is nothing like an attempt at the reproductive process, and there is a thin, ichorous, and very offensive discharge from the sore. Sometimes you see this phagedenic process of ulceration extending slowly upon the prepuce or glans, and gradually destroying those parts. At other times it goes on with much more rapidity; the surface of the sore assumes a livid appearance; there is an ichorous discharge; and, without the occurrence of sloughing, but simply by ulcerative absorption, it rapidly destroys the part in which it is situated. There is thus a kind of acute rapid phagedæna, and a more chronic or slow kind of phagedenic ulceration.

The fifth kind is that of sloughing, or gangrenous chancre, where there is a loss of vitality, and the surface of the sore assumes a dark, black, and manifestly a sloughing appearance. The surrounding parts are highly inflamed in this case; there is considerable redness, swelling, and acute pain; there is also loss of vitality, the ulcerative surface of the part that has sloughed is separated, and a fresh slough forms over the part; thus the sore becomes rapidly larger, and it spreads in every direction, until the part is destroyed by that kind of process which I have described as constituting sloughing phagedena. Then when a part assumes, in this way, a gangrenous form, and when the ulcerative process extends under it, certain destruction of the part ensues, unless the process can be stopped. Considerable inflammation attends the progress of this process, affecting all the surrounding parts; thus, when it is seated on the glans, or in the prepuce, phimosis takes place; the prepuce becomes inflamed and swelled, and cannot be retracted; then the progress of the sore is hidden from your view. The external surface has a bright-red and smooth appearance, and there is a copious discharge from the contracted orifice; there is a sanious, ichorous, extremely offensive discharge going on. This sloughing chancre is found to take place under two different circumstances. We very commonly see it as the result of neglect and intemperance; in the case of sores that may not have been sloughy originally, and where persons, having primary syphilitic sores, take none of the precautions to get rid of them, but continue their occupations, and go on with with their intemperate habits, causing a high degree of inflammation to be superinduced upon a complaint which is, of itself, originally of an inflammatory nature; but, in other cases, the sloughy state is observed from the very commencement. There is a high degree of constitutional disturbance under this form of change; there is a full and hard pulse, more particalarly when it occurs in young, robust persons; a white tongue, and, in fact, the general symptoms that characterize high inflammatory fever.

These are the principal varieties which we observe in the appearance and characters of primary venereal sores. I do not know that this enumeration includes all the forms of ulceration that may be observed; in fact, there are intermediate degrees, between them; but all we have to do with respect to description, is to present you with an outline of the circumstances. We cannot, perhaps, embrace, in our account, the minute features of each particular gradation.

It is important to observe the distinction between syphilitic sores and other ulcerations or affections which are incidental to the same parts. If an ulceration take place on the external organs of generation of a healthy person, a few days after having had connexion with a suspicious character, we can have very little hesitation in ascribing the disease which is then produced to the application of venereal poison, because, in ninety-nine cases out of a hundred, the disease unquestionably will be venereal.

Persons are continually pestering us by asking, whether this sore or that sore is venereal or not. I am very much in the habit of telling them, I consider it comes from whoring, and if they had not been employed in that which they ought not to have been doing, they would have had nothing the matter with them.

As to the expressions true syphilitic, and non-syphilitic—true and bastard syphilis—these terms I have already told you I entirely discard. All sores that arise from sexual intercourse are, with me, venereal sores; and I have mentioned to you the various characters these assume under various circumstances. I regard any of these characters to be as much venereal as any other of them. I do not know that the character of syphilis belongs to one of them more than to another.

Now the prepuce, both on its external and internal surface, is liable to an attack of inflammation, and the formation of minute lymphatic vesicles, which we call *hespes præputialis.* A little portion of it inflames, a few vesicles form on it, the fluid contained in them becomes purulent, it is discharged, and dries up on the surface. It is, I think, so decided in its character, that it can hardly be confounded with any venereal disease; then the surface of any part of the external organs of generation concerned in copulation, may be seriously abraded, or broken by exertion at the time. This is a circumstance that takes place at the very time of coition, and it is an immediate effect; therefore you distinguish that, or any thing that occurs immediately afterwards, from that which does not take place until some days subsequently. There is a secretion natural to these parts, which occasionally accumulates with persons who neglect cleanliness, and which may be the source of irritation and ulceration. The prepuce, and, indeed, the whole penis, is sometimes liable to a kind of inflammation producing a scaly surface, like what is called *psoriasis* in other parts. There may be a redness, with a scaly state, which cracks and comes off, but that can hardly be mistaken for venereal disease.

Treatment of Venereal Sores.—In the treatment of venereal sores the first question that occurs is, whether we should attempt to remove or get rid of the venereal poison in the very commencement of the disease by any process at all similar to that which is employed in the case of the other animal poisons, such as hydrophobia. Now, excision, or destruction of the parts by caustic has been recommended with this view. I believe excision is very little practised in venereal diseases; but, sometimes, on the very first appearance of the pustule or venereal sore, we apply lunar caustic, and this prevents it from making any progress. With respect to the treatment of the sloughing venereal sores, when you come to consider the high state of inflammation of the parts, that they lose their vitality in consequence of it, when you consider the general circumstances attending the case, you can have no hesitation in saying that antiphlogistic treatment of the most active kind is necessary. This is no case at all for mercury. The employment of it would not only do no good, but would aggravate the mischief. It accelerates the gangrenous process; it increases the destruction of the part; it adds to all the symptoms. You should, therefore, take blood from the arm: perhaps take blood locally also; purge the patient, put him on low diet, and then administer sulphate of magnesia and the tartrate of antimony. In fact, employ the means that are calculated to reduce excessive action. Locally, apply soothing remedies, tepid fomentations, and warm poultices to the part. That is, employ all means, locally and generally, that are calculated to reduce excessive action; and in that way you will treat cases of sloughing chancres with the greatest efficacy.

Now I have mentioned to you that in these cases you will often find inflammation of the prepuce with phimosis; and that state of the parts aggravates all the mischief that would arise from the affection considered in other respects. The glans penis, if it be the seat of the chancre, is highly inflamed, and consequently considerably swelled. This inflamed and swelled state of the glans painfully distends the prepuce. The prepuce is also highly inflamed, and acts as a kind of ligature and a source of local pressure upon the inflamed and sloughing glans penis. Thus the glans and the prepuce mutually injure each other. The swelled glans produces a stretched and inflamed condition of the prepuce, and, in fact, carries that inflammation to such a degree as often to produce mortification; and the pressure of the inflamed prepuce acts with equally injurious effect on the glans itself. You find every indication of high inflammation of the penis generally, and of the glans particularly. You have a copious flow of reddish, sanious, and very offensive matter, from the contracted orifice of the prepuce; under such circumstances, no doubt, the means I have just mentioned to you will relieve the symptoms of the affection; the free employment of the antiphlogistic means will lessen them. But these alone will not do. You will not succeed in relieving the patient unless you combine with them the operation of dividing the prepuce. Carry a director into the orifice of the prepuce, and conduct it along the superior and middle surface of the glans until it has reached the part of reflection over the glans; you then divide the prepuce, by a sharp-pointed bistoury; and as in this way you cut through the whole of the prepuce, you generally produce a very large bleeding, which affords great benefit; and still further relief is afforded by thus relieving the glans and the prepuce both, from the pressure which they mutually produced on each other. This is a very important auxiliary measure in addition to the antiphlogistic means I have already described. Now, some apprehension has been entertained respecting the effect of this process, from the probability of the divided edges of the prepuce taking on the same gangrenous or phagedenic process which is going on in the original ulceration. The risks of this operation have been very strongly represented by some persons as a sufficient reason against resorting to the practice. I have divided the prepuce in a great number of instances in cases where the worst kinds of ulcerations have existed either upon the glans, or upon the internal surface of the prepuce itself; and I have never, in any one single instance, seen any ill consequences result. I have never seen an unfavourable ulceration take place on the margins of those wounds; on the contrary, in instances where a sloughing or phagedenic state of ulceration has existed, and the sores have been exposed by such a division of the prepuce, I have very frequently seen that the margins of the divided prepuce, that is the edges of the wound, have maintained a perfectly healthy character, and have actually healed, while the other destructive process has continued to present irregular sores; but the general course of experience is, that the sloughing chancre or phagedenic ulceration gets into a perfectly healthy state, and that it, as well as the margins of the wound which has been newly made, proceed most favourably after the parts have been so liberated. When the sloughing symptoms have been reduced by the antiphlogistic plan, we frequently find that though the sloughing character is removed, the sore remains in the state of phagedenic ulceration; that is, there is great pain, and the patient is restless, and suffers very considerably. In that state you employ opium both locally and generally. You give opium internally, freely, a grain of opium once in eight, six, or four hours; and you apply opium to the sore in the form of lotion, and perhaps the best form of that is what I have already mentioned to you—the liquor opii sedativus of Battley, diluting an equal part of it with an equal quantity of distilled water; dipping a piece of lint in it, laying it over the sore, and then covering the whole with a bread-and-water poultice. In this way the irritable state that may remain after the adoption of the antiphlogistic means is most effectually put a stop to.

In the progress towards recovery, you may perhaps find a state in which the local application of mercury might be advantageous,—the black-wash or fumigation. You may also find that sarsaparilla would be useful. But it is only in some rare instances that you can use mercury, even locally, in cases which have had the sloughing character.

There are some instances in which the local excitement, and the general excitement connected with sloughing chancre, have subsided before we see the case. We may find that the prepuce, or the glans, or both, and perhaps one-half of the penis, has sloughed before we have had an opportunity of interfering. Perhaps we may see the entire half of the penis as black as one's coat. Here we shall find the general febrile disturbance has subsided; that the patient has a reduced, feeble, and languid pulse, with a cold state of the surface and extremities, and with all those general symptoms of depression which accompany the supervention of mortification, when it occupies a very considerable part of the body. In such a case, of course, any antiphlogistic treatment is out of the question: stimuli, tonics, cordials, may be advantageous: perhaps opium, bark, wine, or even brandy. The local applications and means must be of the same character, such as the balsam of copaiba, and the various other remedies of which I had occasion to speak to you in describing generally phagedenic and sloughing ulceration.

I have only a few words to say to you respecting the treatment of phagedenic ulceration. This, like sloughing chancre, does not bear the general administration of mercury. You may employ mercury locally,—you may apply the black-wash to the parts. You will resort to narcotics to relieve the pain which accompanies the phagedenic character. You may employ sarsaparilla internally, and such other means as particular symptoms may require; these constitute the treatment of phagedenic chancre. You will very often find that the ulcerative process will take its course, so as to destroy the glans, or the prepuce, or both, without your being able to counteract it; and you would not do any good by administering mercury; but, under such circumstances, you might aggravate the mischief. Now it does sometimes happen, however, that when a state of active phagedenic ulceration is going on rapidly, and parts are being destroyed by it, you can arrest the progress of the disease by the exhibition of mercury. When there is a simple phagedenic state of the chancre, when there is nothing like sloughing to be observed, when there is nothing but ulcerative absorption, and the consquent destruction of parts by it, without any considerable redness or swelling in the surrounding parts,—without any considerable constitutional disturbance, but the destructive process going on rapidly, you may find it expedient to exhibit, and sometimes you may succeed in stopping the progress of the affection by the active exhibition of mercury. I acknowledge it would be difficult to point out the distinction between these,—to say precisely what is the kind of phagedenic ulceration in which you ought to use mercury, and what is the kind in which you ought not. It is a difficulty that can only be overcome by experience; but I think it right to say that there are such cases. I would say, that you should, in the first place, endeavour to relieve and stop the progress of the disease by antiphlogistic treatment; that you should take blood from the arm, and endeavour to arrest the progress of the affection by such means. Supposing you do not succeed, then I think you may properly try the mercury in a decisive form; and here you would give the remedy in pretty considerable doses, and frequently repeat them,—two, three, or four grains of calomel every eight, six, or four hours; and if you found you did not do any good by that, then you must have recourse to the soothing plan of treatment I have already described.

LECTURE XXVI.

Venereal Disease. — Treatment of Primary Syphilis—Secondary Symptoms.

I SPOKE to you, gentlemen, in the last lecture, of the treatment of sloughing and phagedenic primary syphilitic sores, and I have now to address you on the treatment which should be adopted in primary syphilitic sores of other descriptions: that is, in the simple venereal sore in which there is no induration, nor elevation of the edge; and the primary sore which has an elevated margin, and the indurated character, and in the various other modifications, which may approach more or less to the character of either of these; and these will include the greater part of primary syphilitic sores, for the sloughing sores and the phagedenic sores are few, in comparison with the others.

It is in reference, then, to the sores of which I am now about to speak, that the question occurs as to the use of mercury; for in sloughing sores, and also in phagedenic sores, generally, the use of mercury is out of the question. Now, with respect to the other descriptions of primary venereal sores, I think the points we have to consider, regarding the employment of mercury, may be comprehended under three questions; first, whether the use of mercury is essential in the treatment or to the cure of such sores; secondly, whether the employment of mercury will abridge the duration of the complaint; or, in other terms, whether it will expedite the cure; and thirdly, whether it will prevent the occurrence of secondary symptoms; whether it will have any effect in protecting the constitution from those subsequent occurrences which we call constitutional syphilis.

Now, that the employment of mercury is not essential to the cure of these sores, I have had occasion to explain to you, and I have shown to you that it has been proved by abundant evidence that all forms of venereal disease may get well without the use of mercury. The next question, then, is, whether it abridges the duration of the complaint; and on this, the evidence is in some respects contradictory. I know it was the opinion of Mr. Rose, whose name I have mentioned, as having commenced in this country those important investigations which throw so much light on the natural history of the venereal disease, and who first shewed that primary syphilitic sores might get well without the use of mercury—I know it was his opinion, that although the cure of primary syphilitic sores could be accomplished without the aid of mercury, yet, that the disease lasted longer—was more tedious than when mercury was employed; and that also has been the opinion of others who have tried the non-mercurial treatment extensively. Yet, from the experiments that have been made in other instances, it appears that the sores treated without mercury got well, on an average, in a shorter period than those that were treated with it. I allude now to some comparisons that have been made in the English army, and also to some that have been made abroad. A report was made by Sir James M'Gregor, the Director-General of the Army Medical Board, and Sir William Franklin, another member of that Board, of 1940 cases of primary venereal sores that were treated without the use of mercury in the course of two years, and the average period of cure in those cases was twenty-one days where there were sores without bubo; forty five days, in those cases in which bubo existed with sores. During the same period 2827 cases of primary sores were treated with mercury, and they occupied in the cure, on an average, thirty-three days where there were sores without bubo, and fifty days where there was bubo with sores. So that here you observe, in point of duration, there is considerable advantage derived in the treatment of such cases without mercury. In a certain number of cases treated at the hospital called Val de Grace, in Paris, a similar kind of result was obtained; that is, out of 1084 cases of primary venereal sores, 386 were treated with mercury, and the average duration of those cases was forty-seven days, without distinguishing whether they had buboes or not; 698 were treated without mercury, and the average duration of those cases was twenty-eight days; according to these statements, then, the result, as far as relates to the period occupied in the cure, seems to be much in favour of the treatment without mercury. The cure was more expeditiously effected when the patients were treated without mercury, than when that remedy was adopted. We do not know exactly the grounds on which the choice was made, in those cases that were treated without mercury, and those that were treated with it. Perhaps the two modes of treatment were applied to a different class of cases, so that we do not know whether this gives us a clear view of the average result of the treatment of cases of the like kind; but looking at it in either way, as I said before, the non-mercurial treatment certainly appears in the most favourable light.

The third question, then, which is a very important one, is, whether the employment of mercury in the treatment of the primary affections, can be considered as at all tending to prevent the occurrence of secondary disease. Now on this point the opinion of Mr. Hunter seems to have been, that the employment of mercury could have no effect as to the subsequent occurrence of secondary symptoms. He says, generally throughout his work, that mercury will cure the condition of the venereal disease, but that it will not cure the disposition to it; that is, that it will cure the disease which exists at the time you employ it, but that it will not prevent the occurrence of subsequent symptoms. His opinions on this point, in various parts of his works, are contradictory; and, I suppose, in point of fact, that he really never instituted any comparative trial himself, but that the opinions he has given on this subject are rather theoretical than practical. However, the returns of a great number of cases treated in the army in the one way and in the other—the returns of cases where patients continued under the constant observation of practitioners for a considerable length of time, where there was an opportunity of accurately ascertaining the result—the returns of such cases lead us to an opinion quite contrary to the statements of Mr. Hunter. They certainly induce us to think that the employment of mercury in the treatment of the primary symptoms, has a marked effect in preventing the occurrence of constitutional or secondary symptoms. This, of course, is entirely a question of experience; it can only be solved by observing the effect of the one and of the other treatment, in a great number of cases. Mr. Rose states, that of the cases he treated without mercury, about one in three had secondary symptoms; that is, a third of all the cases had constitutional symptoms. There were some experiments made, about the same time, at the York Hospital—a military hospital at Chelsea, which has been discontinued, and in those experiments it was stated, that the proportion was one in ten; but in larger experience in the army, it is found that the proportion of secondary symptoms is not more than one in twenty. In the 1940 case that were treated in the army without mercury, 96 instances of secondary symptoms occurred; and that is about one in twenty of all descriptions. In the 2827 cases which were treated with mercury, there were only 51 cases of secondary symptoms, and that is one in fifty-five. So that, in the whole number of primary cases which were treated without mercury, there was a proportion of secondary symptoms amounting to one-twentieth; in the whole, treated with mercury, the proportion of secondary symptoms only amounted to one fifty-fifth. The inference, therefore, from this view is, that the employment of mercury in the treatment of primary syphilitic sores, has a marked influence in protecting the patient against secondary symptoms.

Now I cannot adduce any experience of my own that at all equals in extent that which I have now detailed to you of those cases treated in the army; but I should state to you, decidedly, as the result of my own experience, that there are very few instances of secondary symptoms occurring, where the primary sores, of the descriptions I have already mentioned to you, were treated without mercury. It is my plan, in private practice, to employ mercury moderately—not extensively, but moderately, in the treatment of primary syphilitic sores (excepting in the cases of sloughing and phagedenic sores), and certainly I have been in the habit of seeing secondary symptoms very seldom occurring in such cases; I may, therefore, state to you, that my experience in private practice, quite accords with the inference to be drawn from the large experience exhibited by the Army Medical Board.

I would state to you, then, that in the description of sores I have mentioned, I should generally administer mercury in a moderate way. In the first instance, one would clear out the alimentary canal of such patients; one would keep them as quiet as possible, put them on a moderate diet, and administer mercury moderately; three, four, or five grains of the blue pill two or three times a day, and apply the black-wash, that is calomel and lime-water, to the sores; and this kind of treatment is certainly, on the average, very successful in the cases of which I am now speaking.

The employment of mercury is more particularly necessary in the cases of indurated chancre; and whether the chancre possesses that character originally, or whether the induration comes on subsequently, or whether the induration occurs in a secondary way, after the primary sore is healed, and shows itself simply as induration without sore, I think the employment of mercury is equally required. We cannot consider our patients to be safe, so long as such induration remains, and I think it is desirable to use mercury in those cases, and to continue the employment of it until the induration has completely disappeared.

There are some instances in which sores form upon the glans, or the internal surface of the prepuce, and where the prepuce goes into a state of phimosis; so that we ascertain the existence of the sore rather by the discharge that takes place from under the prepuce, than by any direct evidence of its existence. After the inflammation of the prepuce is reduced by soothing means, if the discharge continues, and if we feel an induration on examining the prepuce externally, or if, upon handling the glans, pain is felt, we naturally conclude that a syphilitic sore is on the glans, though we cannot see it; and in such instances I think the moderate employment of mercury is proper; and we may inject (after syringing the part well with warm water) the black-wash, or a solution of the sulphate of zinc, or of the nitrate of silver.

In some instances, primary syphilitic ulceration makes its way through the internal membrane of the prepuce, through the reflection of the prepuce over the glans, and then the ulceration creeps on under the sheath of the integuments which surround the glans; and when this part of the prepuce is thus perforated by ulceration, diseased action very frequently extends under the integuments, and almost entirely isolates the body of the penis, passing sometimes as high up as the pubes. Under such circumstances, it seems to me always to be the best plan to slit up the part that is thus undermined by ulceration. We find that healthy action does not take place if we leave it in its original state; it is necessary to slit up the undermined portion of skin, and then you will find it will heal very readily.

When the absorbent glands of the groin are affected, in consequence of primary syphilitic ulceration, they sometimes swell rapidly, become red, hot, and painful — suppuration quickly takes place in them. In other instances they swell slowly, the pain is not considerable, the swelling does not become red; the parts are indurated—simply swollen and indurated. There is a kind of acute inflammation of these glands, leading to suppuration; and there is a more chronic swelling leading to induration and tumour. The treatment of these swellings, or, as they are technically called, buboes, a term derived from the Greek, signifying groin—the treatment of bubo, I say, of course is the same, so far as the general means go, as that of the primary symptoms with which it is connected; they both participate in those general means which are adopted for the primary symptoms. The state, however, of the swelling of the glands may of itself require particular measures. If there be active inflammation of the glands, you treat it as you would active inflammation occurring elsewhere; you apply leeches; you may apply cold lotions, you may apply poultices, and whatever a simple kind of inflammation elsewhere would require. If formation of matter takes place, it is as well, perhaps, not to be too hasty in opening the bubo, for we sometimes find that it is absorbed, and it may not be necessary to remove it by an opening. When, however, the integument has become thin, and there is a sensible fluctuation, it is generally expedient to make an opening in the collection, for you find it will otherwise open itself. You may either slit up the thin skin by a longitudinal incision, or you may apply caustic, if the detachment of the skin has been very considerable, in order to destroy a portion of the detached integument.

We generally find the suppuration is not in the glands themselves, but in the cellular substance surrounding them, so that, when we open the bubo, if the opening be considerable, we see the glands exposed, nearly as much as if they had been dissected. If the sore, which is connected with bubo, requires the employment of mercury, and if the bubo itself be of indolent and indurated kind, rather than of the active inflammatory description, it will generally be advisable to employ mercury in the form of friction; and this form of using it has generally been considered to have been particularly advantageous; it has been supposed, that the passage of the mercury through the diseased glands, has an advantageous effect in dispersing the bubo; whether this be the case, perhaps, is rather doubtful. Such, however, is the opinion of Mr. Hunter, and he speaks very strongly of the advantages that are derived in the dispersion of buboes from the employment of mercury in this way. Indeed he says that, for a considerable portion of his life, having been in the habit of using mercury very extensively in this manner, he has never seen any bubo proceed to any extent under that treatment; that he has checked the progress of it, so as to prevent suppuration occurring. If the bubo has either been opened or has ulcerated, and if the sore that has been produced is going on favourably, has a healthy aspect, and if the primary syphilitic ulcer should have healed, it is not necessary to persist in the employment of mercury on account of the bubo; we may then leave the mercury off, and use simple common measures of treatment.

It frequently happens, in persons of scrofulous constitutions, or of those who are otherwise of a weak habit of body, that the ulceration of bubo extends—becomes very considerable; that sinuses formed by suppuration, occur in the loose cellular membrane about the bend of the thigh, and sometimes very formidable local affections are the result. Under such circumstances, I need not observe to you, that perseverance in the use of mercury would be most prejudicial—that it would aggravate all the symptoms. In such cases, we should give the patient the advantage of country air, change of air, the sea air, good diet, tonic medicines, and not think of persevering in the use of mercury. When the integument covering a bubo has been considerably thinned before it has been opened, it often happens that the edges of the bubo are undermined in the ulcerative stage, that the margin is left in an unhealthy state, and that cicatrization does not take place in consequence. Here the progress of the cure has been much accelerated, by paring off with a strong sharp pair of scissors the undermined edge or skin of the bubo; after doing this, you will find the cicatrization will take place very rapidly. In such instances, if cicatrization does not advance as fast as you would expect, it will be well to employ mild stimulants; the red precipitate, for example, or the solution of the nitrate of silver. In addition to that, you should use pressure, by placing compresses on the ulcerated part, and firmly binding them on. We sometimes meet with swellings of the glands of the groin of an indolent kind, which do not proceed to suppuration, and do not disperse. The glands remain swelled and painful, the patient is prevented from taking his ordinary exertions, and continues much in the same state for a considerable time. Under such circumstances, the application of blisters to the surface of the skin is very often advantageous. Sometimes such an application will decrease the inflammation in the glands, and bring it on to suppuration; sometimes it produces dispersion of the glandular swelling.

Secondary Symptoms.—I have in the next place to speak to you, gentlemen, of the secondary symptoms of syphilis. In general an interval elapses between the appearance of the primary and secondary symptoms; and usually this interval is from six to twelve weeks. Occasionally, however, the secondary symptoms come on at an earlier period; even show themselves before the primary symptoms have disappeared. It is not very uncommon to see a person having, at one and the same time, primary syphilitic sores, buboes, eruptions of the skin, sore throat, iritis, and affections of the periosteum and bones. You may see a patient with all these at the same time; the secondary, if we may use the expression, overtake the primary symptoms—they come on before their time. There are other instances in which the appearance of the secondary symptoms is more protracted, in which they do not show themselves until considerably after the time at which we should usually have expected them. And there are some instances in which a very long period elapses between particular symptoms of the venereal disease, and others that come on next in order. Now it happened to me, not long ago, to have a patient who had a venereal eruption all over his body. The character of it was so strongly marked that I had no hesitation whatever in asking him immediately how long it was since he had primary syphilitic disease. Well, the truth was, it was so long that he had forgotten it, and he was surprised at my inquiry. It turned out to have been fourteen months; the primary syphilitic affection had got well fourteen months before. I saw another instance in which nearly two years had elapsed between the primary sore and the syphilitic eruption which was the consequence of it. I had occasion to see a gentleman who had been under my care for a primary syphilitic sore, and subsequently for a sore throat consequent on that, and this gentleman had married. He had married about twelve months after he had recovered from these symptoms. He came to me in about three years and a half after the period of his marriage, and he had then got syphilitic symptoms of a very well-marked kind, which had recently occurred. These were easily cured, but there could be no doubt as to their syphilitic character. It has lately happened to me to see two instances of sore throat, that I could not have hesitated at all in calling syphilitic, if I had looked at the throat alone, and considered that without reference to any other circumstance in the case. One was the case of a patient in this hospital, and another that of a gentleman who consulted me in private. Those were both individuals in whom you could not account for the ulceration of the throat in any other way; and I think in one there had been no syphilitic appearance for eight years, and in the other as much as ten years had elapsed. There seems, therefore, to be considerable latitude with respect to the time that may elapse between the appearance of primary and secondary symptoms, and there may also be considerable difference in different individuals. And really I feel myself unable to point out a limit, or to say what length of time may be considered as absolutely necessary for securing a person from the recurrence of the disease. I know that some would say, particularly with respect to the two or three last instances I have mentioned, that those could not be regarded as syphilitic, that, judging from the length of time, they must have arisen from some other cause. Now, I do not know from what ground that assumption proceeds. If six or twelve months may elapse between the primary and secondary syphilitic symptoms, or between two particular effects of the venereal disease—if six or twelve months may elapse, I do not know any reason why two or three years, or a still greater number, may not intervene. It is only a question of experience. I can only say, as to those cases I have mentioned, that I was fully satisfied of their syphilitic character, and I do not, therefore, feel able to define the time after which we should say an affection cannot be syphilitic. The occurrence of constitutional symptoms is very commonly preceded and accompanied by a considerable degree of feverishness of the constitution. In this respect there is a good deal of analogy between constitutional syphilis and the generality of exanthematous diseases, for the constitutional symptoms more or less show themselves by eruptions of some kind on the skin; and in some cases the febrile disturbance of the system is very strongly marked.

I have already detailed to you, generally, the symptoms which make up constitutional syphilis, and I need not go over that ground again; I have now to explain to you their particular varieties. In the first place, then, we have various forms of cutaneous eruptions: scaly syphilitic eruption is one of the most common. The skin, before the eruption appears, exhibits a kind of mottled or marbled appearance all over the body. If you strip the patient, though the skin is seen in the natural state, yet there is a streaked or mottled appearance underneath; there are little patches of red, appearing through the cuticle, which give it that appearance. Very soon you observe small spots of a reddish-brown, or what would be called a coppery colour on the skin; and this has always been the marked character of venereal eruption. These reddish brown superficial discolorations of the skin soon become more deeply coloured. The cuticle covering them desquamates a little, becomes scaly, and the cuticle separates. The spots increase in size; they often run together, so that you have considerable patches of the skin in various parts of the body assuming this colour; in the end, these discolorations generally are large in size, and particularly vivid. They have a bright coppery-red colour; and the cuticle over them becomes very scaly. They are very strongly marked when they occur in the palms of the hands and soles of the feet; then the contrast of the colour of the diseased with the healthy skin is very strong; and the cuticle, being thick, cracks, and assumes a whitish appearance; so that the character of a venereal eruption of this kind is very strongly marked in these parts. It is what would have come under the description of that which Willan and Bateman call syphilitic lepra, for syphilitic psoriasis; and very frequently syphilitic eruption exhibits itself in the tubercular form. In the scaly form, which I have just mentioned to you, the discoloration is superficial, and the coppery-red spots do not rise above the level of the surrounding sound skin; but, in the tubercular eruption, you have a small kind of eruption, with the point more raised, and as that proceeds, the cuticle goes into the scaly state; so that that is, in fact, a scaly eruption, although there is a tubercular elevation of the cuticle in the first instance. In other cases, there is a more acute action of the skin—active inflammation, with the formation of inflamed pimples, or of papulæ, as they are technically termed. These arise in clusters and patches in various parts of the body; after remaining for a certain time they vesicate and suppurate, and that suppuration dries up, and they go into a scaly state, and you have a succession of those pimples forming over various parts of the body; this is called papular venereal eruption. There is another form in which you see it—where pustules, that is, inflammation of the skin, take place, effusion occurs, and the cuticle is elevated into inflamed pustules; these proceed, and form venereal ulcers—that is, the pustular venereal eruption. These are the principal forms of eruption that you observe, as secondary symptoms of syphilis: a scaly syphilitic eruption, which may be called syphilitic lepra, or syphilitic psoriasis, a tubercular eruption, a papular eruption, and a pustular eruption proceeding to ulceration.

Now you do not find these eruptions always distinct; frequently they are so, but sometimes the different characters of the eruptions are united; that is, you will find an eruption partly tubercular and partly scaly, or you may see a mixture of the pustular with the scaly; in short you do not find them invariably existing in their separate and distinct forms.

The pustular eruption spreads into ulcerations; the cuticle, which has been elevated by lymph or pus, gives way, and the fluid which is discharged encrusts upon the surface. The skin ulcerates under that encrustation; a greater discharge of matter takes place, and the encrustation is increased. If the part be kept moist, you then see an ulcer; but if you leave it exposed to the air, the matter concretes in the way I have mentioned, and the part is covered with encrustations more or less thick. The ulcerations thus formed are superficial sores, generally of a circular shape, and rapidly healing. In other instances, they degenerate into very foul and intractable ulcerations of a phagedenic character. Very generally they retain the circular form, and we find that they heal up in the centre, but not towards the edges; that there is a healing up in the centre, and a very foul or tawny margin by which the ulceration extends. Frequently the sores are of a crescent shape; that is, they have a convex edge by which they extend, whilst they heal up at the concavity. Sometimes the phagedenic edge is simply of a tawny colour; at other times it is considerably elevated, and almost sloughy, with a very red, angry, and fiery state of the neighbouring skin. There is a considerable variety in the characters of those syphilitic ulcerations of the skin, all which originate, in the first instance, from a vesicle or pustule.

The skin is also liable to other affections dependent on venereal disease: ulcerations take place of a secondary character, in the skin, about the arms; and there they very commonly have an elevated margin, with somewhat of an indurated base, something like the indurated syphilitic sore. At other times, the ulcerations about the margin of the anus have the appearance of fissures or chaps; and the natural folds of the skin about that part seem to give rise to the particular form which the old writers call *ragades ani*; that is, a cracked, ragged, and ulcerated condition of the parts about the anus. The skin at the roots of the toes, and the skin on the surface of the toes opposite to each other, often go into a state of foul ulceration, with elevated surfaces, and a copious, thin, and very offensive discharge takes place from them: that form of ulceration has been called *ragades digitorum*, chaps of the toes. The parts which are the seat of primary syphilitic sores, more especially in females, often produce warty excrescences, which sometimes have an extensive surface, and they are called *condylomata*. These are, perhaps, hardly to be regarded as syphilitic; occasionally they are the result of irritation in the skin, in consequence of syphilitic disease affecting the neighbouring parts.

In conjunction with these affections of the skin, we not unfrequently have inflammation of the iris taking place; and that is a form of disease which may occur in conjunction with various forms of syphilitic eruptions—we may have it either with the pustular, or with the scaly syphilitic eruption. Then, either together with the affections of the skin, or shortly after them, or independently of them, it is not uncommon to have various ulcerated affections of the fauces, or mucous membrane covering the neighbouring parts—sore throat. In the first place, there is a form of ulceration principally observed in the tonsils, in which there is a deep ulcerated excavation taking place in those parts; a destruction of the substance, without any attempt at reparation; a loss of substance as if a part had been scooped out, the surface exhibiting a tawny appearance, as if covered with a stratum of thick yellow matter; these have been called by foreign writers, lardacious ulcerations, as if they had been covered by a stratum of lard. These are principally observed in the tonsils; but you may observe the same kind of affection running along the outside of the palate—along the edge of the uvula. And you will find that this ulceration will occur with very little apparent disturbance of the mucous membrane generally, hardly any thing like inflammation about it; nor is there any thickening or considerable pain observed: sometimes it is found to have proceeded to a considerable extent before the patient is aware of its existence. It has been chronic, without any great disturbance. Frequently, however, there is a much more active disturbance of the mucous membrane of the throat, which becomes red and swelled, secreting more mucus than usual; a good deal of discharge filling the throat, and a superficial ulceration with white patches, superficial spots extending over the velum paleti, or superficial ulceration of the tonsils. Again, the throat may be the seat of a very formidable phagedenic ulceration; that is, there may be a destruction of the substance of the mucous membrane; it may have a sloughy, or, at least, a phagedenic character, with a bright-red appearance of the surrounding portion of the membrane, and occupying, particularly, the upper and posterior part of the pharynx, reaching above the velum palati, and extending further downwards than you see by inspection externally. Frequently ulceration is not confined to the throat, but it may take place also in various parts of the tongue, or in the mucous membrane of the cheeks, or of the lips. Sometimes there is a state of ulceration of the mucous membrane of those parts. Sometimes the mucous membrane is thickened, raised into a kind of irregular swelling. The limbs, the joints, and bones, are also the seat of various affections connected with syphilis.

In the outset of constitutional symptoms, it is not uncommon for patients to complain of severe pain of the limbs generally, and of the joints, without our being able to observe any particular swelling, or obvious deviation from the natural state of them. In the more advanced stage of syphilitic affections, however, we find severe pains in the central portions of the limb—not in the joints, but in the intermediate parts; and we then usually find, that swelling takes place either in the bones, or in the periosteum covering the bones of the limb. Sometimes the swelling is of that hard incompressible nature, that we can have no doubt of the bone being in a state of inflammation; sometimes it is, although firm, of a more yielding kind, and such as is calculated to lead us to suppose the periosteum is the seat of the affection. There may be exostosis or periostosis forms of disease of the bones and their covering. In these cases it frequently happens, that patients complain little during the day, but the severe pain comes on during the night, which prevents them from getting rest, and goes off again in the morning. In some cases of this kind, there is a simple thickening of the periosteum, or swelling of the bones. In others there is a more active affection; the disease proceeding to suppuration, matter forms under the periosteum, makes its way out, and a portion of the bone perishes—syphilitic caries takes place, that is, the substance of the bone ulcerates, and perishes to a certain extent. In the more protracted cases of syphilis, it is not uncommon to have considerable swellings, with much pain in the joint. In the early part of constitutional syphilis, you have simple pain in the joints, but where it has been of long continuance, where the patient has been exposed to repeated attacks, inflammation of the synovial membrane of the joint occurs, and swelling of the joint itself, in consequence of interstitial deposition. These then, are the common appearances of constitutional syphilis, or lues venerea, as it is called: various eruptions of the skin; various ulcerations; ulcerations of the mucous membrane of the fauces, and of the neighbouring parts of the mouth; pains and swellings; pains of the limbs and joints; and swellings of the joints, periosteum, and bones; iritis frequently taking place in conjunction with affections of the skin.

There are other forms of secondary syphilis, which are less common. Sometimes the lining membrane of the meatus auditorius becomes inflamed, and a thick purulent discharge takes place from it, accompanied generally with deafness. Sometimes a chronic swelling of the testicle occurs; the testicle becomes enlarged, becomes hardened, and is usually irregular and tuberculated on its surface, attended by considerable pain. Commonly only one testicle is affected, sometimes both. When the bones of the body are affected, it is not uncommon to have those of the nose and of the palate suffering. Probably the affection in the nose is in its nature similar to that which takes place in the shin bone; considerable pain is experienced in the part; the membrane covering it becomes ulcerated, portions of the bone come away, and fetididischarge takes place. Sometimes the affection of the throat spreads to the larynx; and this, in fact, is a very serious extension of the disease. When we see how close the mucous membrane of the larynx is to the mucous lining of the throat, which is so commonly the seat of syphilitic disease, we are, perhaps, rather inclined to wonder that this extension does not take place more frequently. It is, however, not a very common occurrence. Syphilis does, indeed, sometimes extend into the larynx, and sometimes necrosis—partial death of the cartilages of the larynx, takes place. The affection here is very serious, as all affections are in those parts where they are capable of interfering with the respiratory functions; it must be very serious—it endangers the life of the patient. Such are the various affections which make up constitutional syphilis or lues venerea. Now, we observe, in general, that these show themselves first in the skin; often, at the same time that they show themselves in the skin, they appear also in the throat, the eye being frequently involved, iritis being added, together with pains in the limbs and in the joints; that is the combination of symptoms which usually exhibits itself in the first instance, when the disease extends further than its primary seat. The bones, the nose, and the joints, are usually affected at a remoter period.

Mr. Hunter divides the parts affected by constitutional syphilis into two classes; he calls one the first order of parts, and the other the second order of parts. Those that I have mentioned to you first, he calls the first order; the bones, the nose, and the joints, he calls the second order. He says constitututional symptoms primarily affect those of the first order, and subsequently show themselves in those of the second order; and, as a general observation, this may be admitted, yet it does not hold invariably true; for, as I have already stated to you, the secondary symptoms sometimes come on before the primary symptoms are gone; and occasionally the second order of parts is affected in the first instance. I saw, not long since, a gentleman who had a primary sore upon the penis, that had lasted a considerable time; the ulceration had extended through the reflected lining of the prepuce, upon the glans, and had burrowed under the skin of the penis. There was considerable induration; it had lasted a long time there, perhaps some six or seven weeks or more, and he had a swelling of the periosteum covering the side of the shin; that was the first appearance of the secondary symptoms in that case. I remember another case of a medical gentleman who consulted me, in which the first appearance of secondary symptoms after the primary, was a swelling of the periosteum of the frontal bone. You are to regard these distinctions, then, of first and second orders, as only true in a general sense, and as not being invariably applicable.

LECTURE XXVII.

Venereal Disease.—Secondary Symptoms in the Skin, soft parts of the Throat, Nose, Testicle —Warts—Syphilis in Infants.

Secondary Symptoms..—I believe, gentlemen, that I omitted in the last lecture to notice one point to which I had intended to advert, namely, the question, whether a syphilitic bubo can occur without any primary sore; whether the glands in the groin can become affected by syphilis, except in consequence of the previous existence of a primary sore on some part of the generative organs? This is a point that is not yet decided. I can only state to you my own belief, which is, that the glands in the groin may become so affected. I mean to say that we do occasionally see instances where chronic indolent swellings of the glands in the groin occur in individuals in whom we cannot trace any other cause for their occurrence; in individuals who have exposed themselves to the possibility of contracting syphilis, and where the employment of mercury in the form of friction on the inside of the thighs very often contributes to the dispersion of such swellings. I fancy the general belief is rather on the other side, that a swelling in the glands of the groin, occurring independently of a sore or discharge, is not to be regarded as proceeding from syphilitic infection; and the point is to be considered as altogether doubtful.

I enumerated to you in the last lecture, and described, the various phenomena which constitute what are called secondary symptoms of syphilis—lues venerea. Now all these do not occur in one individual, nor do they occur indiscriminately; but we are in the habit of seeing certain of these affections combined; they form certain groups, which exist either in conjunction with, or in succession to, each other, in particular instances. There does not seem to be any thing like an invariable coincidence of them in any individual; but we are in the habit of seeing that many of the appearances of both frequently do combine together, and that some of them do not, so that we can give a sketch of what occurs in particular instances. In a former lecture I had occasion to observe to you, that Mr. Carmichael, of Dublin, conceived that certain secondary symptoms could be traced to certain primary sores as their origin; that a certain train of secondary symptoms might be referred to a particular primary sore, and that there was so much regularity in the connexion of these phenomena, that he considered himself authorized to believe in the existence of several forms or different species of venereal disease, to which he has assigned names. I may just mention to you, that the distinctions which he has adopted, and the names which he has given to them, certainly show that certain symptoms, both primary and secondary, are frequently conjoined; and, inasmuch as that is the case, I think we may very properly adopt, at all events, some of the names which Mr. Carmichael has given to those characters, without adopting, to their full extent, his notions respecting the different varieties of poison which produce them.

The indurated chancre—that sore which has been described by Mr. Hunter, and which, in consequence of his description, has been generally regarded by the profession since as more particularly deserving the name of syphilitic primary sore or chancre; that indurated chancre is commonly followed by the scaly eruption, by the excavated and tawny-coloured ulcer of the tonsils, by pains in the shafts of the long bones, and by nodes formed on those bones. This combination of symptoms, Mr. Carmichael calls the scaly venereal disease, and it is that combination of symptoms which has been more particularly described by Mr. Hunter in his work on the venereal disease, and which, subsequently to his description, has regularly been assumed as constituting the true venereal disease or syphilis. Mr. Carmichael considers, that this form of venereal disease is particularly benefited by the administration of mercury, and that, in fact, the employment of mercury so as to affect the system, is the best treatment of this form of the affection, whether in its primary or in its secondary shapes. I should have no hesitation in agreeing with him on this particular point, namely, that the indurated chancre, the scaly eruption. the excavated ulcer of the tonsils, and the nodes on the shafts of the long bones, with severe nocturnal pains occurring in the same bones, are symptoms which do require mercury, and the removal of which, if not absolutely requiring, is much accelerated by the employment of mercury, so as to affect the system. We are not, however, to lay down the use of mercury, even in this form of the disease, in that same absolute and positive manner, in which it was heretofore regarded as a remedy for syphilis. The recent inquiries into the history of syphilis demonstrate, as I have told you, that all forms of the venereal disease can get well without the use of mercury; that syphilis is not that uncontrollable disease which proceeds to destroy the part affected, and then goes on from one part to another, with a progress essentially destructive throughout the system, till it destroys the individual in whom it occurs; these are notions decidedly erroneous, because the disease may go through its progress and wear itself out without mercury, in whatever form it may occur. We are to consider, therefore, that mercury, though the best remedy in treating the disease, is not such as that we are to persevere in the use of it at all hazards till we affect the system. Mercury acts, as I have told you, as a kind of poison in some individuals, and produces very serious and very bad effects indeed. Heretofore it has been regarded as better that the individual should bear these ill effects, than that the syphilitic symptoms should go on; but now we know that the venereal disease does not produce those destructive consequences, we are not so imperatively called upon to persevere in the use of mercury, when its operation is essentially prejudicial to the individual who takes it. Under such circumstances, then, even in this form of the disease, we should relax for a while our employment of the mercury; we should allow the bad effects to subside; we should resume the use of it again, leave it off again, return to it again in smaller quantities than those which we had before given, and so forth. And we derive this advantage, at all events, from the recent inquiries, namely, that we need not expose our patient to the injurious effects which mercury is capable of producing, as we may lay it aside, and trust, at all events, for a time, to the employment of other means.

The second form of venereal disease described by Mr. Carmichael is, what he calls the papular venereal disease; I should have mentioned to you before, that Mr. Carmichael characterizes the disease chiefly by the form which the eruption assumes; he considers the eruption as the circumstance most characteristic in the natural history of the affection; and we certainly find that this is true in many other cases, as in small-pox, cow-pox, and so forth. He says, that the papular eruption follows either the superficial venereal disease, which is unattended with induration of the basis or elevated edge; that it follows simple gonorrhœa, and that it also follows a primary affection which I have not yet mentioned to you, that is, an excoriation of the prepuce and glans, with puriform discharge. This is a kind of primary affection, with respect to which one is under some doubt whether it ought to be referred to gonorrhœa or syphilis. We find, however, that occasionally the lining of the prepuce and covering of the glans penis becomes inflamed, red, thickened, excoriated, superficially ulcerated, and that there is produced a thin, purulent, and generally strong-smelling discharge: this has sometimes been called gonorrhœa preputii—gonorrhœa of the prepuce; and with that affection we not uncommonly find an indurated venereal sore on the prepuce, at the reflection of the lining over the glans penis: at all events, we find an excoriation without being able to say that it is actually in a state of ulceration. Now these three forms of the primary venereal affection—the superficial sore without elevated edge or indurated basis, the gonorrhœa preputii, or the inflammation and excoriation of the prepuce and glans, with purulent discharge, and gonorrhœa properly so called; these three forms of the primary affection, according to the experience of Mr. Carmichael, are very commonly followed by papular eruption of the skin, by inflammation of the mucous membrane of the fauces, with superficial ulceration, by particularly severe pains of the joints and limbs, without swelling of the periosteum of the bones, or swelling of the joints themselves, and considerable pains in the chest and back. The papular eruption is a tolerably acute inflammation of the skin: it consists of the formation of a number of pimples of a bright red colour; that is, it consists of a number of minute patches of active inflammation of the skin; and when these exist all over the body, you will not be surprised that they produce considerable febrile disturbance—that there is a full pulse, pain of the head, thirst, a white tongue, disturbance of the digestive organs, and considerable pain in the limbs and joints. This, in fact, is a rather more active inflammatory disturbance of the system, than that which is observed in the scaly venereal disease; although I may observe to you, that the appearance of constitutional symptoms of syphilis, whatever form they may assume, is usually preceded by more or less of febrile constitutional disturbance. The symptoms that I have just mentioned to you of course require a pretty active antiphlogistic treatment; sometimes venesection, at all events active purging, and the administration of saline and antimonial medicines afterwards, low diet and rest; and they neither require, nor are they benefited in the active inflammatory stage, by the employment of mercury. Indeed, this papular venereal eruption will go through a certain course much like the other active inflammations of the skin, the small-pox, measles, &c. The pimples very commonly vesicate, or form a little pus at the point, the inflammation then subsides, the vesication dries up, a little desquamation takes place, and the inflammation entirely disappears. You may have a succession of these pimples; you may have patches of them forming on various parts of the body, and you may have some difficulty in removing them; however, the progress of the complaint leads to a natural cessation ultimately. The eruption comes to an end of itself often, independently of the employment of any particular means: you watch the symptoms, and you hasten their termination by the antiphlogistic treatment suited to the state of the system. There is no necessity for the employment of mercury generally in these cases, except towards the decline of the affection, and then you sometimes accelerate the cure by the moderate employment of it—by the blue pill, or Plummer's pill, in moderate doses. This form does not, like the former shape of the affection, require the regular and active administration of mercury. I may observe to you, however, that when iritis occurs, which it often does, in conjunction with the papular eruption, and in conjunction also with the scaly eruption, that it then usually requires a considerable and pretty active administration of mercury, within the space of a short time: this is a point, however, that I shall have occasion to advert to more particularly when I come to treat of affections of the eye.

A third well-marked form of the ulcerative venereal disease is that which Mr. Carmichael calls the phagedenic form, where the primary form has the phagedenic character, and where the affection of the skin in the secondary stage consists of tubercles, which proceed to ulcerations, and which form ulcerations possessing also the phagedenic character—spreading by phagedenic margins, where the sore throat is of the same character, exhibiting phagedenic ulceration, more particularly at the back part of the pharynx, and where there are very troublesome and obstinate affections of the bones and of the joints. These affections, both primary and secondary, are attended with very considerable pain, and, generally speaking, the sufferings throughout these affections are very considerable; so much so as to wear out the strength of the patient, and very seriously debilitate the constitution. Hence it happens that, inasmuch as these affections show great tendency to relapse—inasmuch as they occur again and again—inasmuch as they present some of the worst cases in which the powers of the system are most reduced, we see the greatest difficulty in conducting the patient to a cure. Examples of this kind of disease, I have already intimated to you, show, generally, that mercury is not a proper remedy in cases of phagedenic affections; that the general employment of it usually exasperates the disease, whether in its primary, or in its secondary form; therefore, we are not to think of the employment of mercury carried to the state of affecting the system generally. I think there can be no doubt that the prejudices of many who are opposed to the use of mercury, have probably arisen, in a great measure, from the effect of the injudicious use of it, in cases of this kind. Under the notion that mercury was a specific for syphilis, it has no doubt been exhibited in phagedenic, as well as in other forms of the disease. Long courses of it have been used in the phagedenic form, because the symptoms would not yield, and have been rather exasperated by the remedy. The symptoms have occurred again and again; mercury has been had recourse to as often, and thus, by the serious nature of the disease, and partly by the injudicious use of this powerful remedy, patients have been brought into a state of great weakness, and no doubt, in many instances, their lives have been lost in consequence. In the phagedenic form of the venereal disease, we generally have recourse to the employment of narcotics, for the sake of soothing the severe pain which accompanies the disease. We use conium, hyosciamus, opium, and Dover's powder; but when the suffering is very considerable, I believe the general experience of the profession is, that opium is the only remedy of this kind on which we can confidently rely, so that we are generally obliged to resort to the employment of opium; and when we use it in cases of this kind, I think we shall find it necessary, not merely to exhibit a single dose at bed-time, but to employ it at regular intervals, so as to keep up the effect on the system. A grain of the crude opium, or five grains of the pilula saponis cum opio, may be exhibited every eight or six, or, in very bad cases, four hours. In instances where we do not require this very free administration of it, we may give a dose of Dover's powder—ten, twelve, or fifteen grains at bed-time, or a few grains of the pil. sap. cum. op. at night, and, if necessary, a few times in the course of the day. In conjunction with this, we may find advantage from the employment of sarsaparilla. If sarsaparilla possess any virtue, I think it must be beneficial in cases of phagedenic venereal disease. These are the cases in which the general powers are considerably depressed, and it is in such cases that we find the efficacy of sarsaparilla most clearly exhibited. Although mercury employed internally is prejudicial in the phagedenic form of the disease, the same objection does not, in my opinion, exist with respect to the employment of it locally; and, in fact, I do not know any form of the affection in which the treatment by mercury locally, in various forms, is not advantageous. The black wash, the yellow wash, and, perhaps, more particularly, the cinnabar fumigation, may be used; the latter is a very eligible form of the remedy in many instances of obstinate and serious ulceration of the fauces, where you cannot apply mercury in any other form. In the intractable phagedenic ulceration of the skin, which is so common, the yellow wash is a very advantageous application. Now it has happened to me, sometimes, to see the cinnabar fumigation applied to the throat, simply with a view to the local influence of the remedy on the ulcer there, produce ulceration in a very powerful degree. In many instances where I have seen this, I have found that the local disease in the throat, and sometimes that the local disease in other parts, has proceeded very favourably. So that I would not lay it down that mercury is absolutely, in no instance, to be employed as it regards its general effect on the system in those cases; indeed, those cases are so obstinate and intractable, that sometimes we find we do not succeed by the remedies we consider, from general experience, the most suitable, and we are obliged to resort to others. Gentlemen who have acquired very great reputation in the practice of their profession, I have seen repeatedly go upon the rule in consultation, that where a person had taken a great deal of mercury, and had not been benefited by it, they have changed the remedy, and said, You must not go on with it, but use sarsaparilla and other medicines; and, on the contrary, where those other medicines have been used without advantage, they have said, You must discontinue them, and have recourse to the employment of mercury; and really we are obliged to do so in some of these cases. We must use mercury internally in some of the phagedenic cases; but, in doing so, we must use it very cautiously at first, we must give it in very small doses; but I would not go to the extent of saying, that you are never to use it at all, even to the extent of affecting the system.

Mr. Carmichael also speaks of a fourth form, the pustular, but he does not speak of this form of it very confidently, nor as if he had fully established, in his own mind, the existence of it; and therefore I need not trouble you with any observations on what he says respecting it.

Now, with respect to the three distinctions, the scaly, the papular, and the phagedenic forms, I think that those cases of them which may occur to you in practice, will very nearly bear out the appearances which Mr. Carmichael has described, and you will recognise this in them, that his descriptions must have been founded on the results of actual observation. Yet I do not feel myself prepared to go to the length he has done, in saying there are so many distinct poisons producing the effects, because there is not that consistency observed in the combination of the symptoms I have mentioned to you which is seen in the other affections of the body, measles, small-pox, &c. in the first place, we do not feel that clear kind of distinction between the various primary symptoms which Mr. Carmichael assumes. We sometimes see sores of different characters existing in one and the same individual. Sometimes we have a superficial venereal ulcer, and an indurated sore, occurring in the same person. You may often have a sore, of which one part is indurated and the other is not. The truth is, that that particular form of induration varies in some respects according to the texture which is affected, for we do not find that induration when the sore is seated in this glans penis. We do also find that there are combinations of the eruptions. You will see tubercular and scaly eruptions occurring in the same individual; you may see a scaly eruption with phagedenic ulceration in the same person. The distinctions, therefore, that have been laid down by Mr. Carmichael, are only to be taken in a general sense, and not to be taken as strictly and accurately true under all circumstances. But the particular rules of treatment which he has laid down, appear to me to be very judicious; and I think you cannot, on the whole, have a safer guide in point of practice than the book which he has written. Now, having mentioned to you, with approbation, this work of Mr. Carmichael, I would also recommend to you another work, of still more recent date, as being well worthy of your attention; it contains a very excellent relation of facts on the subject, judiciously arranged, and the various doctrines are discussed in it with the advantage of considerable personal experience, in a very rational way—I mean, the Treatise on Syphilis by Mr. Bacot.

The affection in the meatus auditorius externus, the inflammation there, with purulent discharge, is by no means a common occurrence in syphilis; it is only seen occasionally, and then not very strongly marked. I have only seen it occasionally where it has been necessary, with other concomitant circumstances, to employ mercury, and I have found that the discharge from the meatus auditorius externus, together with the disturbance that has accompanied it, has yielded very favourably to mercury.

The affections of the bones and joints that occur in some individuals are often very tedious and very troublesome. The majority of instances, I fancy, of what we call nodes, are inflammations of the periosteum of the bones affected. Sometimes this inflammation is of an active kind, attended with external redness, and proceeding to the formation of matter. Generally speaking, however, it is a mere indolent and chronic swelling, and it is particularly troublesome in consequence of the severe pain which accompanies it. Proceeding on ordinary principles, we should say that, under certain circumstances, it would be benefited by the application of leeches, and, where it is more active, by poultices. I do not know that, in general, we find the application of leeches very useful in these instances, although I would not venture to assert that that is not a mode of treatment we ought to employ in certain cases. When, however, the inflammation proceeds to suppuration, we do not find that much matter is formed; but when tendinous parts are concerned, or when the formation of matter occurs under the periosteum of the bone, we find that free incision, so as to liberate the matter, is attended with marked advantage; therefore, where we have tried other remedies without giving relief, an incision through the inflamed and swelled parts down to the bone, so as to set the matter at liberty, very frequently puts an end to the patient's sufferings. In the more chronic forms of this affection the mercurial plasters may be employed with advantage externally, with the internal use of the pil. submuriat. hydrarg. comp.; but, when this occurs as a symptom consequent on syphilitic disease, as well as in other cases, we no doubt shall find the most advantage derived by the employment of mercury, so as to affect the system. Seeing the efficacy of mercury in many of these cases, I am rather surprised at the opinions that have lately been given by many practical persons, namely, that the employment of mercury gives rise to these affections; that these nodes on the bones actually owe their origin in the employment of mercury. I must acknowledge that this is contrary to my own experience; it appears that that particular form of the disease results from particular primary forms, as in the cases of eruptions or any other characters of syphilis; but, independently of that where nodes, that is, inflammation of the periosteum, arise independently of syphilitic affection, I do not know any more powerful mode of combating them, after the use of antiphlogistic means, than the employment of mercury, so as to affect the system. The affection of the joints generally takes place in the protracted states of syphilitic disease; and some of the most troublesome of those cases occur in the advanced periods of phagedenic syphilitic disease. You frequently find the synovial membrane of the great joints, such as the knee-joint, swells, and that the joint itself enlarges from the deposition that takes place. You might infer that the local abstraction of blood by cupping, or leeches, would be of advantage in such a case. Sometimes it does good, but you cannot rely, under such circumstances, upon the abstraction of blood as a means of alleviating the affection as fully as you could when the joints are the seat of the affection, and when the synovial membrane becomes inflamed from other causes. I think blistering is most beneficial in those cases; and blistering is also resorted to with advantage in the cases of obstinate venereal affections of the periosteum. In reference to these pains in the joints, and of the limbs generally, and also to the venereal eruption, much good is, in many instances, derived from the warm bath, and this is a remedy which may be combined with any of the other modes of treatment to which we are in the habit of resorting.

The affection of the testicle is not one of the more frequent forms of the syphilitic disease; we see it occasionally. I do not know that this affection of the testicle occurs particularly in conjunction with any of the forms of the disease I have mentioned, though I think we seldom see it alone; we usually find it occurring with some other secondary symptom, and the coexistence of it tends to assist our diagnosis. The affection of the testicle consists in a moderate enlargement of it, with induration, general enlargement and swelling, so that there is a kind of knotty enlargement existing, with no very active inflammation, no redness of the scrotum, nor is the testicle very large. I think I have invariably found that this particular symptom is removed most effectually by the employment of mercury.

The affection of the nose, like that of the bones, has been considered of late, by those who have entertained strong notions against the use of mercury, to be an effect resulting from the administration of mercury. Now, I believe, no one has ever heard any body say that he has seen an affection of the nose arising in persons who have employed mercury for any other purpose than that of overcoming the venereal disease. I have seen affections of the nose arising in persons who have employed mercury for the venereal disease, to no very great extent; so that I do not participate in those opinions which ascribe this effect to mercury, although one may usually look to this, as one of those forms of disease which may be rendered more severe by the injudicious use of the remedy. I think, in general, the use of mercury does not do good where the nose is the seat of disease, and that sarsaparilla and narcotics are the means that should be resorted to, together with a lotion of the corrosive sublimate in distilled water or lime-water—that treatment is the safest mode of proceeding.

Syphilitic Warts.—With respect to warts, as connected with syphilitic disease, we do not find it necessary to resort to the employment of mercury in the treatment of them; they are to be regarded in this, as they are in other cases, the result of simple inflammation of the parts; and, therefore, their treatment falls under the general rule of treatment applicable to warts under other circumstances.

Syphilis in Infants.—There is one other form of the venereal disease still remaining, that I have to speak of to you, and that is syphilitic disease as it occurs in infants. This is a form of the disease not arising in the way that the disease does in the adult, through the medium of sexual intercourse. Syphilis is communicated to infants through the medium of the circulating fluids of the mother; the syphilitic poison is conveyed to the child in utero by the blood of the mother, and the child is sometimes born with the effects of the poison visible on it at its birth, but more commonly the result of the affection becomes apparent in a few weeks after birth—four, five, or six weeks, or even a longer period. The affection as we see it in infants is very strongly marked; it is so peculiar that, in my opinion, it cannot be confounded with any other. The sores and the nature of the disease appear to me equally clear and unequivocal; and hence I must acknowledge that it seems to me very strange that Mr. Hunter, who appears to have seen a very great number of well marked instances of it, should have put it down in the chapter of his book in which he speaks of diseases resembling syphilis, but which are not syphilitic. In the first place, this affection of children only arises where they are born of mothers that have actually laboured under syphilis; and the disease itself, in the infant, presents the strongest analogy to syphilitic disease as we see it in the adult. The disease which thus appears may be communicated from the child to a healthy woman who suckles it; and the disease thus produced in the woman is capable of affecting other individuals. And lastly—what I should have supposed would have been the strongest argument with Mr. Hunter in favour of its syphilitic nature—it is curable, and most easily and decidedly so, by the employment of mercury. That is Mr. Hunter's great criterion, in general, for deciding whether a complaint is syphilitic or not. If a disease gives way easily under mercury, he argues that it is syphilitic; if not, he argues that it is not syphilitic. Therefore this affection of the infant is one that would come under his idea of syphilis in all its circumstances: the origin of the affection, its nature, the way in which it can be communicated from one individual to another, and the mode in which it is cured—all concur in shewing that the affection is in its nature syphilitic.

Now we naturally ask, in the first instance, whether this affection in the child proceeds from the primary or the secondary form of the disease in the mother? So far as my own opportunities of observation and inquiry have gone, I should say that it is produced, not by the existence of the primary, but by the existence of the secondary, disease in the mother. I do not mean to say the existence of primary disease in the mother may not produce it, but in the majority of instances, I think we find it seems to have owed its origin to the secondary or constitutional form; and, in fact, the disease, as it appears in the child, does not bear the characters which would constitute a series of symptoms that we should regard as primary in the adult. I remember the instance of a young female about sixteen years of age, who was in this hospital, a patient of mine, being then far advanced in pregnancy—about the sixth month—at all events as far as that, and who had got very obstinate chancres, for which I had to employ mercury so as to salivate her, and which I did freely. I may observe here, that that was done without having had any effect on the offspring. I am not sure whether she had any secondary symptoms before the birth of the child or not, because she did not continue to remain under my care; but knowing that she was in the family way, I was interested in the case, and I told her when she left the hospital, to bring the child, and let me see it in a month after it was born. She brought it, and it was then perfectly well and healthy. I told her to bring it to me at the end of another month: and she came a fortnight sooner with it, poxed all over, and she herself had got a syphilitic affection of the throat, and was ill altogether. Now this is the only instance that I have got, of primary disease alone appearing in the mother where the infant was affected, but yet I cannot say that she had no secondary disease before the birth of the child. There is another case mentioned by Mr. Hey, of Leeds, in a paper in the seventh volume of the Medico-Chirurgical Transactions, entitled, "Facts illustrating the effects of the Venereal Disease on the Child in Utero, by William Hey;" and it appears, from what he there states, that the disease originally arose from secondary symptoms in the mother; and I observe that he introduces a question, which I have also submitted to you in a former lecture, namely, whether syphilis can be communicated from the husband to the wife by cohabitation, when the husband labours under the secondary or constitutional form of the disease? And he is of opinion, although he is not able to state any positive facts to support him in that opinion, that the disease may be so communicated, that the husband labouring under secondary symptoms, may, by cohabitation, communicate the disease to the wife; and I acknowledge that that also is the impression on my own mind, from the circumstances that have come under my observation.

Children that have received syphilitic affections in utero, are sometimes born with the cuticle desquamating and peeling off, all over them; in a desperate state, weak, emaciated, and just ready to die, in fact. Such is the form in which syphilis exists at the time of birth. But more commonly the children are born healthy, and a few weeks after birth begin to exhibit symptoms of the disease;—redness of parts, excoriations, superficial ulcerations, and sometimes vesicles, or pustules, show themselves about the anus and the external organs of generation; and this affection, which commences in these parts of the skin soon after they are born, gradually extends all over the body; thus, in a short time, you will find that the child exhibits over the whole of it patches of a coppery-red discoloration of the skin, sometimes large in quantity, and sometimes small; that those patches go into a slight scaly state, and that the cuticle desquamates or seperates from the whole of the body, sometimes without any manifest previous inflammation; but you will find it separating over the whole body, even to the palms of the hands and soles of the feet—peeling off from the whole frame. You will see those patches of light coppery-red discoloration of the skin particularly large and vivid about the face, so that the child's face has a nasty scabby appearance. You will observe ulcerated fissures at the corners of the mouth; aphthæ of the mucous membrane of the mouth; a soreness and raw state of the eyelids. You will find that the nostrils become inflamed, and that a thick, viscid, yellow secretion stuffs up the nares, so that the child has generally a kind of snuffling about the nose; and when you come to look at it, you will see that the nostrils are completely plugged with that thick, yellow, offensive matter. In conjunction with these symptoms, you find, as you would naturally expect, that the child loses flesh

—becomes shrivelled and wrinkled — miserably emaciated, fretful, and irritable, and exhibits marks of the most unfavourable constitutional affection; and, in fact, if the complaint be not relieved, the infant very soon goes off.

It has only happened to me in two instances to witness iritis as a symptom of syphilis in the infant. I have seen two instances of that, but all the other cases I have seen, and I have seen a great number, have consisted of more or less of the symptoms I have just mentioned to you. Sometimes there are particularly marked indurated ulcers about the anus; that is, superficial ulceration, with elevated edges, and rather an indurated base.

The treatment of these cases is very simple. You must administer mercury; and, fortunately, these young subjects bear the administration of mercury very well. Half a grain, or three quarters of a grain, or a grain of calomel may be given night and morning; or four or five grains of the hydrarg. cum cretâ may be given night and morning, and this simple treatment accomplishes all we wish. You will find that under this treatment the local symptoms I have described very rapidly become better; ulcerations, if they have been produced, heal rapidly; the scaly eruption of the skin goes off; the discharge from the nose ceases; the child recovers its flesh; and, really, in instances where children seem to have been so emaciated and reduced that you could not have expected any thing but dissolution, you will find, in a very short time, that all the symptoms are gone, and that the children gain health and strength. On the continent it appears to be the more general plan to administer mercury through the mother, and to affect the child through her medium. Now I have found the direct administration of mercury to the child answer extremely well, so that I have generally adopted that kind of treatment.

You should be aware that the syphilitic disease which I have now described to you, when it occurs in children, is capable of being communicated from children to sound women who suckle them; and that women who thus receive the infection are capable of communicating it to other persons; thus it is of great importance that those who are nursing a child under these circumstances, should be aware of the necessity of employing all the necessary precaution for checking the propagation of the affection.

The effect of the venereal disease, when it is introduced into the system of the mother, and when it thus influences the state of health of her offspring, is in some instances not confined to a single birth, but it extends to others; and that in cases where the woman has not received the infection immediately by sexual intercourse, children at two or three different births have been affected with it.

There are two or three instances of this kind related by Mr. Hey, in the paper that I have just alluded to. He mentions, that in the latter end of the year 1770 and the beginning of 1771, a blind woman, who gained her living by drawing the breasts of women during their confinement, became affected with ulcers at the angles of the lips, which were judged to be venereal. He found that she had drawn the breasts of a woman who was supposed to be labouring under the venereal disease. He treated these ulcers as syphilis, and they healed under that treatment. He observes, that several women whose breasts had been drawn by this woman became affected with syphilitic disease. He mentions one case in particular. Mrs. B. had her breasts drawn twice by this woman, upon the death of her second child, which died of the small-pox, and within three or four weeks afterwards perceived a swelling of the axillary glands, and complained of soreness in her throat. The swelling in the axilla was, no doubt, the effect produced by this blind woman drawing her breasts. The gentleman who saw the sore throat, deeming it to be venereal, exhibited mercury, and it got well. During the treatment she became pregnant, but continued the use of the mercury during her pregnancy; and, at the end of seven months, she miscarried of a dead child. She became pregnant again in 1772, continued to enjoy good health, and was delivered of a child, apparently healthy, in February, 1773, which she herself suckled. When the child was about six weeks old, an eruption, which Mr. Hey judged to be syphilitic, appeared upon its legs and arms. He put both the mother and child upon a mercurial course, giving the former small doses of hydrar. submurias, and the latter hydrar c. creta. By that treatment, the child was in a short time freed from the eruption, but continued to take the medicine till the beginning of August. In October following, two or three small ulcers appeared on the outside of the labia pudendi of the child, and on that account the mercurial course was resumed, with the addition of an occasional dose of hydrar. submurias. The ulcers were soon healed, but in May 1774, the nostrils became sore, and the integuments of the nose were also tender; at the same time the child grew hoarse. The mercurial course was repeated, and continued for two months. The child also took the medicines during part of the months of September and October; after which time there was no recurrence of disease. In June 1775, this same woman bore another child, which was apparently healthy at its birth, and continued to be so for a few weeks. Blotches of a copper-colour then came out upon the skin, but soon disappeared, upon having recourse to mercurial medicines. After some time the blotches appeared again, and were accompanied with a small ulcer in the labium pudendi, as in the former case. The child was, however, completely cured by a repetition of the treatment, and remained well.

Now here you observe there is a succession of appearances, proceeding from 1771 to 1775; successive children of the same mother becoming affected by venereal disease, which she had received from the woman who had drawn her breasts; so that it had not been communicated through the medium of sexual intercourse.

Some time ago, I had occasion to see a case of affection of the breast, where there was a primary ulcer, with indurated base and margin, consequent on disease communicated to a nurse by a child that she was suckling; and the facts of the case that I have just alluded to may serve to illustrate the natural history of these affections. A lady, in the family way, called upon a poor woman, and told her that she was living in private; and observing a healthy child at her breast she asked her to take her infant when it was born, and suckle it. The woman consented, keeping her own infant at the right breast, and the other at the left breast. The latter child was healthy at the time it was born, but she stated that, in a week or a fortnight after, she observed two small blisters, as she described them, come about the organs of generation, the nose got stuffed, and the mouth became sore; in fact, the woman described clearly a syphilitic affection of the child. As soon as the child's mouth was affected, her own nipple got sore. The child took white powders, and the eruption gradually got better, but her own nipple remained sore. At the time I saw her (February, 1827,) the infant had not got well, its skin had marks of venereal eruption over various parts of the body, and it was stuffed about the nostrils; the suckling still continued. The woman who nursed the child had a smooth red superficial ulcer upon the breast. The sore looked clean; in size it was nearly equal to a shilling. The substance of the gland about the nipple was indurated, forming a lump as large as an egg; there was also a superficial sore in the axilla, and a lump above it, which probably was a glandular affection caused by the primary sore. When I asked her whether she had any eruption or sore on any other part, she said she had not; but I found, by examination, a few small spots on the scalp, a few of a similar character on the region of the pubes, and two or three superficial ulcerations on the labia. These were the appearances that resulted as the secondary symptoms of the primary sores communicated through suckling. I gave her mercury in a moderate way. Her own child, which had taken the right breast, continued well; which was a singular circumstance. She had been suckling it for some weeks, at the same time that she nursed the diseased child, and though she was affected with constitutional syphilis, her own child did not suffer at all. By means of the remedies employed, both the child and nurse got better.

After a time, she passed the child on to another woman; she did not choose to go on suckling it any longer, and the child seemed tolerably well when the other nurse was engaged for it. I had first seen the child in February, and I saw it again in April. It was then mentioned that the child had been sent to another nurse, and that, a week before, a few small brown patches appeared on the anus and about the face, and that some discharge took place. The nurse's nipples had become sore, but it was a mere common excoriation. The nurse that I first saw, had then fresh appearances of a scaly eruption; the nipple to which the disease was originally communicated was well. On the 18th of July the second nurse called, to shew me a sore on the breast; it was without granulation, about the size of a shilling, and had existed three weeks, not having been checked by the applications that were used. The child that had given her the disease had died of the measles, before I saw the woman on this occasion. On the 20th of July, this second nurse had a small reddish eruption thickly scattered over the hands, especially on the palms. On the 24th the eruption was more marked, and spread over the hand, running half way over the fore-arm. She took mercury, and the symptoms disappeared; the sore on the mamma and the eruption went off. The second nurse was delivered of a fine healthy infant, about the 2d of April, 1828; and this child was brought to me on the 20th July, covered with syphilitic eruption from head to foot. It consisted simply of red patches, principally on the body, with the cuticle peeling off. Those on the hands and fingers, and on the organs of generation, were deep red, and partly excoriated. The lips were chapped and scaly. This child was emaciated and fretful, and was fed by the hand, the mother having no milk. The child got well, but the mother died of phthisis.

Here you see there was a child giving the syphilitic disease to a healthy woman that nursed it; at the same time her own child, which was kept to the right breast, had no disease. The woman—that is, the nurse,—had a primary sore on the breast, and an affection of the absorbent glands, eruption over certain parts of the body, and appearances on the external organs of generation similar to what we should recognise as a primary syphilitic affection. This child is then put to another woman to nurse—the child then appearing well. The second woman has a primary sore on the breast; has an eruption occurring over various parts of her body; she then becomes pregnant, and is delivered of an infant, who, in about four or five weeks, is covered with syphilitic eruption from top to toe.

Now, in these and a variety of cases of a similar kind, the evidence of the nature of the disease, of the mode in which it is communicated to the children, and in which these children are capable of communicating it to other individuals, are so clear, that I am quite at a loss to discover what the grounds are which have led persons to doubt the syphilitic nature of such affections; and I can say most decidedly, that the administration of mercury, in the way that I have mentioned, is the most efficient mode of removing these appearances.

LECTURE XXVIII.

Gonorrhœa: Treatment.—Phimosis.—Paraphimosis.—Warts.—Hernia Humoralis.

Gonorrhœa.—The disease, gentlemen, which bears the technical name of gonorrhœa, and which common mortals call clap, is an inflammation of the mucous membrane of the urethra, attended with puriform discharge, which discharge unluckily possesses infectious properties; that is, it is capable of communicating disease to the mucous membrane of the urethra, or of the vagina, of a healthy person, when brought into contact with it. Gonorrhœa, then, is an infectious disease, and it is usually conveyed from one individual to another by sexual intercourse, but not necessarily so.

If you consider the etymological construction of the term gonorrhœa, it might lead you to form a somewhat erroneous opinion of the nature of the affection, more particularly with respect to the nature of the discharge. The word gonorrhœa, which is of Greek derivation, is equivalent to the word flux, *fluxus seminus*, in Latin; that is, discharge, or flow of the seminal fluid. Now, it is not of that nature; it is an increase, with an alteration in quality of the natural mucous secretion of the part; an increase and altered quality of the mucous secretion, consequent on the inflamed state of the mucous membrane. In order to give a more significant name to it, some French writers have called it *blenorrhœa*, which merely means excessive flow of the mucous fluid. However, the term gonorrhœa is one so generally received, and the meaning of it is so well known, that I believe we need not attempt to change it for any other.

I had occasion to speak to you, in describing syphilis, of what is called the poison, or virus, which produces that disease; so do we also recognise the existence of a poison, or virus, in the production of gonorrhœa.

A question has arisen, whether these two diseases, syphilis and gonorrhœa, are produced by one and the same poison, or whether they owe their origin to different poisons. I mentioned to you, that we knew nothing about the venereal virus, or poison, considered in the abstract, and I may now also observe, that we know as little about that which causes gonorrhœa, that is, we do not know at all what is the particular ingredient composing it, the particular nature of the gonorrhœal discharge, or of the secretion from a syphilitic sore that is capable of producing those diseases in another person, when applied to certain parts. We only know, that a fluid, called gonorrhœal discharge, and that a certain secretion from syphilitic sores, will produce these affections. We are not acquainted, therefore, with the poisons in the abstract; we only know of the poisonous or infectious secretions, as they are made evident in those cases. The question, then, respecting the identity or the diversity of the two poisons, seems to me to come to this,—whether two things, both of which are entirely unknown to us, are the same, or whether they are different. Now it is very difficult to answer a question of that kind. We may, perhaps, make it more clear, and bring it into a shape more susceptible of an answer, by putting it in these terms—Is gonorrhœal discharge capable of producing syphilis, and is the secretion of syphilitic sores capable of producing gonorrhœa? In this way it is reduced to a question of fact, which we might suppose could be answered with tolerable ease. Now if we see two effects that are perfectly like each other, we may naturally infer, that the causes which have produced them are similar; and, on the other hand, when we see two effects totally dissimilar, we may naturally infer a dissimilarity of causes. How does the case stand, then, with respect to the present question? Syphilis consists of ulceration, followed by a train of morbid appearances in various parts of the body, continuing a long time, sometimes several months. Gonorrhœa consists of inflammation of a mucous surface, that of the urethra or vagina, going through a certain course, coming to a natural end, and not attended with further effects than those which immediately occur in the parts concerned. These two diseases seem to me to be totally contrary to each other; and the natural influence in my mind, contemplating them in this way, is, that they must owe their origin to causes essentially different.

Those persons who believe that syphilis first arose about the time of the discovery of America, or of the invasion of Naples, are of opinion that gonorrhœa existed before that time;—that that was an old disease; and we should naturally suppose that the persons who hold that opinion, must think gonorrhœa depends on a poison different to that of syphilis; for if gonorrhœa existed previously to those periods, how did it happen, supposing the poison to be the same that produces syphilis, that syphilis did not also exist as long as gonorrhœa? The belief of the identity of the poisons seems to me quite incompatible with the belief that gonorrhœa is an ancient infection, and that syphilis is one of recent date. However, it does happen that persons who believe in the recent date of syphilis, are still of opinion that the poison, producing the two diseases, are identical; and this was the case with Mr. Hunter. He is a great advocate for the identity of the poisons that produce gonorrhœa and syphilis. In fact, he says distinctly, that the two poisons are the same, and that the two different effects arise merely from the difference in the textures of the parts to which the poison may be applied; that is, if this poison be applied to a mucous surface, such as the urethra of the male, or the vagina of the female, it produces gonorrhœa; if it be applied to surfaces covered by cuticle, then it produces syphilis—primary syphilitic sores. Now if these were the only differences in the two cases, it appears to me that, in the first place, we should expect to find females, where affected with disease of this kind, almost invariably labouring under gonorrhœa, and very seldom under syphilis, because the poison is applied in them to the surface of the vagina; it may also be applied to some of the external parts of the organs of generation, but not necessarily so. Necessarily it is applied to the internal surface of the vagina, and we ought, therefore, necessarily to have gonorrhœa almost always produced in the female. We do not, however, find that gonorrhœa exists in a greater proportion in females than syphilis. Then, on the other hand, we should expect to find that syphilis would be found to exist much oftener in the male than gonorrhœa, for the poison is applied in the male to the surface of the penis and the glans penis, and it seems difficult to account for the introduction of the poison into the male urethra, yet we find that gonorrhœa exists to a great extent in the male sex. If, in the two cases, the poisons be the same, we should expect to find the two diseases existing together, for we might suppose them to be both acquired at the same time, especially in the female, where the poison is applied both to a secreting and to a non-secreting surface. Now we do occasionally find, that the two diseases exist together, but this is comparatively uncommon. Mr. Hunter determined to bring his opinion upon this point to direct experiment, and he therefore applied, by the puncture of a lancet, the matter of gonorrhœa to the surface of the glans penis and prepuce. He has given a long detail of the experiment he made, the result of which was the production of chancre in the part, the subsequent occurrence of bubo, ulcerated sore throat, node, and so forth. If this experiment be admitted, it would decide the question; because, according to the experiment, the production of syphilis by the gonorrhœal discharge would be unequivocal. For my own part, however, I can only say, that in the narrative there are so many inconsistencies, that, in spite of the high authority of Mr. Hunter, I must withhold my belief; and I am in some measure encouraged in this by the fact, that attempts have been made to produce primary syphilitic sores from gonorrhœal matter, and to produce gonorrhœa from the discharge of syphilitic sores, which attempts have totally failed. Mr. Benjamin Bell, of Edinburgh, recounts several experiments of this description—experiments in which gonorrhœal discharge was introduced by inoculation with the lancet, and produced no effect whatever. He gives other instances also, in which the secretion of primary syphilitic sores was applied to the vagina of the female, and to the male urethra, and the secretion from a chancre was introduced by a small puncture under the surface of the male urethra. He found, in these cases, that disease was produced, but not gonorrhœa; in fact, chancre was produced—chancre which led to the occurrence of secondary symptoms, and required a long course of treatment for their cure. And here I may further observe to you, that Mr. Hunter's statement is by no means correct, that the application of any infectious matter, either to the vagina or urethra—that is, to a mucous surface, will produce not a sore, but discharge. The statement is incorrect; for we happen to know that chancre may take place within the orifice of the male urethra; and very troublesome it is when it does take place there. We know also, that it may take place within the vagina. The urethra, therefore, of the male, and the vagina of the female, are susceptible of the occurrence of syphilitic ulceration.

The general result, then, of the observations I have made to you, leads me to this opinion, that gonorrhœa and syphilis are *essentially different* in their natures; that the poisons which produce the two must be different; and that there is a much greater difference between the two affections than can be accounted for amply, by the difference of the textures of the parts in which they are seated. I consider them to be totally different in their natures, and, consequently, that the causes which produce them must be equally different.

A certain interval of time elapses between the application of the infection and the occurrence of gonorrhœa, a few days. Gonorrhœa generally takes place sooner after the infection than chancre; but it has been protracted for two or three weeks. In the first place a slight degree of heat, tingling, or uneasy sensation, is experienced about the orifice of the urethra. The margin of the opening swells and becomes red; that is, the lips of the urethra become tumid and red, and then very quickly the discharge shows itself. A thin yellowish fluid oozes from the urethra, soon increasing in quantity, becoming thick and yellow, sometimes having a greenish appearance, the pain and uneasiness increasing in proportion as the discharge increases. Together with these symptoms a very unpleasant sensation is experienced in making water. The passage of the urine over the inflamed surface of the urethra produces a sense of heat, burning or scalding, which has been technically called ardor urinæ,—scalding in making water. This is followed by copious discharge from the urethra. The symptoms increase to a certain extent in violence, they last for a certain time, the pain begins to subside, the discharge diminishes in quantity, it goes away entirely, and thus gonorrhœa, if left to itself, will pursue a certain course, and altogether disappear; this process occupying a space perhaps of four, five, or six weeks. Sometimes, instead of disappearing entirely, the discharge diminishes in quantity, becomes of a less bright-yellow colour, and sometimes even colourless; the swelling goes off, the scalding in making water is lost, and nothing remains except this increased secretion. In this state the complaint may last a great length of time,—weeks, months, or even years; and is then technically called gleet.

Now, persons who catch a clap do not always get off so easily as this. What I have described to you is a sort of gentle clap; the symptoms are mild; it is a sort of middle case. But frequently the inflammation is very considerable; the glans penis swells and becomes of a bright-red colour; the lips of the urethra are particularly tumid and red; the prepuce swells, becomes œdematous, and goes into a state of phimosis; inflammation extends along the whole lining of the urethra to the bladder. In the mild case I have mentioned to you, it is found, by examination, that the inflammation of the urethra does not run further than about an inch and a half or two inches from the orifice; and Mr. Hunter calls that the specific distance. He seems to have had an idea, that in clap the inflammation does not usually reach beyond the point I have mentioned. However, the inflammation by no means observes this limit in all cases. It gets beyond Mr. Hunter's "specific distance," runs along the whole course of the urethra, and extends to the bladder, the mucous membrane of which becomes inflamed. This is followed by considerable pain in the affected parts. The pain is felt severely in the region of the bladder and about the perineum. The patient experiences painful erections. The irritation to which the penis is subject, gives rise to those erections. They are repeated frequently and attended with excessive pain. More or less this is a symptom usually experienced in a clap. The violence of the inflammation is sometimes attended with an effusion of coagulable lymph, either into the interior of the corpus cavernosum, or into the corpus spongiosum urethræ. This is attended with considerable pain, the penis being kept erect, it is called chordee; it seems as if the organ was confined in a straight or unnatural situation. The patient, when the inflammation extends into the bladder, is tormented with an almost incessant desire to void the urine. The act of voiding the urine is very painful. The heat and irritation of the urethra by the passage of the urine are increased to an almost unbearable degree. Under such circumstances, and inasmuch as the mucous membrane of the urethra is swollen, the dimensions of the urinary canal are diminished, so that the urine passes with difficulty through the urethra, comes out very slowly, and of course the pain in discharging it is proportionately augmented. This difficulty sometimes proceeds to such an extent that the urine comes away in drops, and indeed the disease may proceed to total retention of the urine. Under such circumstances it happens occasionally, that some of the overloaded vessels give way and blood is discharged. This is often attended with benefit, for it tends to relieve the distended vessels of the inflamed membrane.

Such are the circumstances which characterize clap, in its worst form. When the inflammation occupies the whole of the urethra, when it more or less involves the lining of the bladder, there is not, perhaps, a more painful state of suffering while it lasts than are the results of a gonorrhœa which runs to this extent. Then other cases again are particularly mild; they trouble the patient with very little pain, and there is only a little uneasiness in voiding the urine.

Treatment.—We next, gentlemen, come to speak of the treatment—how to cure a clap. It would be a very interesting discovery, indeed, if any one could find out a speedy and effectual mode of accomplishing this. Medical and other students would feel greatly interested in the discovery; and a person who could cure a clap in a short time would undoubtedly immortalize himself. The ladies of Fleet-street and the Strand would be inclined to erect a statue to his memory; I believe, however, there is no very speedy mode of accomplishing the object, and that we are not able to diminish very much that kind of moral lesson which this suffering is calculated to convey. The treatment of the clap may be considered either as rational or empirical. When we proceed to treat it rationally, or on principle, we regard it as an inflammatory disease, and treat it by antiphlogistic means. In some of the bad cases which I have mentioned to you, it may be necessary, perhaps, to take blood from the loins or perineum, by cupping, or by leeches; to purge, to administer sudorifics and saline medicines, with antimony. The patient should be kept at rest in a recumbent position, and on low diet; in fact, altogether upon a pretty active antiphlogistic plan of treatment. After clearing the bowels actively, you may administer the liquor ammoniæ acetatis with nitre, combined with the super-tartrate of potass; or any of these medicines, combined with antimony, in pretty considerable doses, may be freely administered. Mucilaginous and diluent drinks should be largely taken, in order to dilute the urine and render it less stimulating; barley water, linseed tea, gum-arabic water. Alkaline remedies are found capable of assisting in this object, particularly the liquor potassæ, which may be given in any of the vehicles I have mentioned; and, perhaps, the best mode of administering it with a view to relieve the scalding produced by the passage of the urine is, to give ten drops immediately after each occasion of making water. If you merely give it at distinct intervals, the effect is lost; but if you give it immediately after voiding the urine, it will have an effect on the secretion before the patient wants to pass the urine again. If considerable pain remain about the bladder and urethra after you have adopted these measures, you will find it advisable to put the patient into a warm bath, the hip bath, and to administer a good dose of Dover's powder, or opium. When the pain continues very troublesome, you may occasionally relieve it by the local administration of opium in the form of injection. In a mild case of gonorrhœa, you adopt a milder kind of antiphlogistic treatment; you empty the bowels, keep the patient quiet, give him low diet, give him nitre and the supertartrate of potass, and diluent drinks.

In the state of high inflammation of the penis, patients experience relief from the application and frequent renewal of cold to the part. Sometimes they fancy they derive more benefit from the application of warmth, from fomentations, or steeping the entire penis in warm water.

An attempt has been made to cut short the disease in the urethra by means of local applications to the inflamed membrane, under the form of injection, and, in fact, this kind of application makes a considerable figure in the treatment of clap. Injections are divided into three or four classes the emollient injection, the sedative injection, the stimulating injection, and the astringent injection. Various mucilaginous and narcotic substances have been recommended under the idea of soothing and removing the pain; that is, supposing them to act as emollients or sedatives. I believe we can do no good in this way by injection, and that so far as pain goes, we shall not benefit the patient by injecting into the urethra either an emollient or a sedative. With respect to a stimulant injection, I do not apprehend that any one could think an inflamed urethra could be benefited by such an application. So that we come at last to the class of astringents. It has been proposed, and the suggestion has been extensively acted upon, to insert pretty strong solutions of astringent substances into the urethra in the early stage of the affection, with a view of stopping the discharge; that is, cutting short the disease in this way. A saturated solution of the nitrate of silver, ten grains to the ounce (which is pretty strong when used in this way), is thrown into the urethra; it is said this will put a stop to the discharge if you apply it at a very early period. I may observe, with respect to these astringents, that you do not want to apply them to the urethra further than to the extent to which the inflammation goes; and as that, in ordinary cases, does not go beyond the distance Mr. Hunter has mentioned, of course you prevent, by pressing the penis with the finger and thumb, the introduction of the injection further than you wish it to go. I have not myself had any experience in the practice of throwing in strong injections. I can only say it has been practised in the army, and the gentlemen by whom it has been employed represent it to be safe and advantageous. More commonly we use injections, if we use them at all, for the purpose of removing the symptoms after adopting the antiphlogistic means I have described in a milder form. We employ the sulphate of zinc, sulphate of copper, the oxymuriate of mercury, or the nitrate of silver; of the three former, two or three grains to an ounce of distilled water, and of the latter not more than one grain to the ounce. These should be injected in the way I have mentioned, about three times a day. In some cases injection of this kind puts a stop to the discharge; in other instances it seems to augment it. The decreased discharges from the injection of astringents have induced a supposition that they give rise to strictures of the urethra, and hence many practitioners never employ them at all. I fancy, generally speaking, the treatment, in London, by injection, is not much adopted.

So much for what we should call the rational treatment. We come, then, to the empirical; and here we do find, that certain remedies exert a certain influence over the complaint, although they are not such in their nature as, *a priori*, we should have expected to have had such an effect. One of these is a remedy of rather a recent introduction, but which, from the experience of its utility, is very generally employed; I mean the cubeb pepper, also called Java pepper—cubebs, a pepper brought from Java. This given at the commencement of the complaint, will very frequently bring it to an end in a few days; and in other cases when it will not arrest the discharge, it will stop the pain. For this purpose you should give not less than two drachms of the pepper three times, or even four times a day. The longer the complaint has existed before you use the remedy, the less likely are you to put a stop to it by the employment of the pepper. Its benefits are found chiefly when it is employed in the early stage of the disease, and the existence of considerable inflammatory action does not offer an objection to its use. Another remedy is the *balsamum copaibæ*, which you give in the dose of from half a drachm to a drachm three times a day, either giving it simply by dropping it on moist sugar, and letting the patient swallow it in that way, or by dropping it in water, and letting him take it as he would castor oil, or giving it in some mucilaginous or emollient substance. After the employment of antiphlogistic means in a suitable way, the administration of the copaiba has a very marked effect in bringing the complaint to an end. The copaiba is much the most commonly-employed medicine in that chronic state of the affection which constitutes gleet.

I have mentioned to you, that the inflammation of the mucous membrane runs through a certain course, and comes to a natural end, without entailing any future ill consequences on the patient. There are, however, some instances in which we have reason to suppose, that secondary symptoms have followed from gonorrhœa; but these instances are so few, that many individuals who perhaps have never seen a case of the kind, will hardly believe the possibility of its existence; but those who have had much experience in gonorrhœa, recognise the possibility of secondary symptoms from it. This is the case with Mr. Carmichael; he says, that gonorrhœa is sometimes followed by eruptions on the skin, pains of the joints and limbs, and ulcerations of the tonsils; but the cure of these does not require the use of mercury; the antiphlogistic treatment accomplishes all that is necessary. There are some other circumstances occasionally observed in cases of gonorrhœa; the inflammation of the mucous membrane of the urethra may cause swelling and inflammation of the glands in the groin; that is, may cause bubo. If you adopt the antiphlogistic measures which the local symptoms require, and keep the patient at rest, you will not be much troubled with buboes of this kind; at all events, the treatment is to be conducted, first, upon the ordinary principles.

Phimosis.—The inflammation of the prepuce, if it goes to a considerable extent, will cause phimosis, contraction of the lining of the prepuce, and particularly of the orifice, so that the prepuce cannot be drawn back over the glans. You must employ, here, local means to reduce the inflammation, and you will not find that phimosis is a serious symptom in a case of clap. It is necessary, in order to lessen the inflammation, under such circumstances, not merely to adopt the local antiphlogistic means we are in the habit of using, but frequently to syringe under the prepuce, to prevent the accumulation there of gonorrhœal discharge. The retention and soaking of that discharge beneath the prepuce, irritates the delicate covering of the glans and the lining of the prepuce; it augments the inflammation of those parts, and may lead to serious ulcerations and other bad consequences; hence it is necessary to practise ablution carefully by means of a syringe.

Paraphimosis.—The opposite state—paraphimosis, may arise either in gonorrhœa, or when sores exist upon the parts in consequence of syphilis; that is, supposing the orifice of the prepuce to have become contracted by inflammation, and the patient withdraws it for the purpose of using some sort of wash, wishing to expose the glans penis, and leaves it withdrawn, the pressure which the contraction exerts over the prepuce behind the glans, occasions the glans to swell, and get into that state which prevents the prepuce being again drawn over it; that is the condition called paraphimosis. If the part remain in this state for some time, considerable swelling and inflammation of the glans will take place. The pressure from the contracted orifice of the prepuce becomes more considerable; it forms a deep fissure behind the corona glandis, as if the penis were tied by a tight string. When you see a case of this kind within three or four days of the occurrence of the paraphimosis, you will seldom fail in restoring the glans to its natural situation. In the first place, you may get a bason of cold water, and let the patient, with a sponge or piece of lint, bathe the part, so as to cool it as much as possible; then you press gently upon the swollen glans with the thumb, or with the thumb and finger of the one hand, while you gradually draw the contracted orifice of the prepuce over the glans with the other. If you proceed thus slowly, squeezing the blood out of the glans to reduce its size as much as possible, and endeavour gradually to push it into the contracted orifice of the prepuce which you are drawing forward, you will usually, if not too hasty, succeed in relieving the patient from a situation of great alarm, apprehension, and pain. When, however, the prepuce has been left in this state for a considerable time, a high degree of inflammation occurs, effusion takes place, and, in fact, the skin of the prepuce becomes fixed and agglutinated in its unnatural situation. Under such circumstances, you will find it necessary to cut through the stricture; for you will find that, although it may not produce bad effects on the glans, it will very much alter the appearance of the penis. If you make a small puncture in front of it, you will be able to introduce a small probe-pointed bistoury, and with that easily cut it through.

Warts.—The irritation of gonorrœal discharge very frequently produces warts either on the glans or prepuce of the male, and still more frequently produces a great abundance of them on the external organs of generation of the female. Indeed, the external organs of the female are so situated and circumstanced as to lead to considerable moistening of them by gonorhœal, or other dischages occurring in those cases of irritation. Discharges, uncleaned, continue to irritate the parts, and thus you have immense growths of warts about the origin of the vagina, the nymphæ, the lower parts of the perineum, and the neighbourhood of the anus. Sometimes the orifice of the anus is quite covered with them, so that you do not feel the end of the intestine. Indeed, those situations are so thickly beset with them, that you would not recognise the parts. Masses of them, not much less than your hand, proceed from those parts, arising from inflammation of the cutaneous textures, and excited by the irritation of gonorrhœal discharge.

When warts are of moderate size, you may attack them either by escharotics or irritating substances. In the first place, you would attack them by putting a stop to the discharge which produces them, and that painful excoriation of the surface which accompanies them. When you bave done that, you may rub the warts over, if they be of moderate size, with lunar caustic; or you may sprinkle them over with irritating powder. When they are large, however, they do not yield to this; you must then remove them with the scissars, and rub the parts over with the lunar caustic, soon afterwards, to prevent their recurrence. Some have recommended the application of strong acids to them; and Mr. Carmichael speaks in great praise of the acetic acid, which acts as any other acid would do as an escharotic, in destroying the vitality of the part.

Hernia Humoralis.—In the course of gonorrhœa it is not uncommon to have the discharge suddenly stopped, and inflammation and swelling produced, with great pain in one of the testicles; and this particular kind of inflammation of the testicle has been called hernia humoralis. It is, in fact, an active inflammation of the gland. The part swells, becomes very painful, and if the inflammation be considerable, the scrotum which covers it assumes a bright-red colour. When the inflammation, too, is considerable, it is communicated to the loose cellular texture of the scrotum, so that its integuments become, in some degree, fixed to the part. Severe pain is felt in the part, more particularly as long as the patient is in the upright position. The discharge from the urethra generally stops entirely.

You must treat this inflammation by the ordinary antiphlogistic means: free bleeding of the part by leeches, fomentations, poultices, enforcement of the recumbent position, and cleansing of the bowels. Sometimes you apply leeches pretty freely and repeatedly, and yet you do not succeed in putting a stop to the inflammation; the part remains inflamed and very painful. Under such circumstances you derive great advantage from the free employment of tartar emetic to the extent of producing vomiting. You may give half an ounce of the liquor antimonii tartarisatum of the Pharmacopœia, which contains a grain of the tartar of antimony, and repeat that every four hours, so as to keep up a continual nausea. From this you will find great benefit; indeed, this treatment is very frequently resorted to for the purpose of relieving hernia humoralis; and I have seen some instances where great pain and inflammation, which had remained in spite of the application of leeches, yield by the employment of emetic tartar in the way I have just mentioned. It is necessary for the patient to remain in the recumbent position until the swelling has completely abated; at all events, if patients who have been confined for hernia humoralis get up too soon, if they attempt to go about their ordinary occupation too speedily, they very commonly bring on a relapse of all the symptoms, so that on this head great caution is necessary.

There are other and more serious circumstances arising from gonorrhœa when it takes place in particular constitutions, those, for instance, of a rheumatic disposition; such persons are liable to severe inflammation of the eyes—to severe inflammation of the mucous membrane of the eyes, and to a serious affection of the sclerotica, sometimes extending to the iris, that is, to the fibrous textures of the eye; sometimes the one and sometimes the other occurs, the complaint in the urethra being diminished, but the discharge still going on more or less during those affections. These inflammations of the eye, I shall have occasion to speak of when I come to speak of the affections of the eye. In the same individual in whom such affection has occurred, in consequence of gonorrhœa, it will almost invariably happen, that a rheumatic affection of the joints will also take place, very commonly of the knees, feet, and ancles, and indeed other affections which certainly pretty closely resemble rheumatism, so that these have been not inaptly denominated gonorrhœal rheumatism. When this occurs in the feet, you find that a particular tumefaction of them, a kind of œdematous swelling, which, in common life, is described as rheumatic gout. These affections of the joints will extend from one joint to another. One joint may get better, and others may become affected. In fact, in the extension of the disease from one joint to another, the shifting of the disease, the affection certainly possesses nearly all the characters of rheumatism. Such affections of the joints may take place in conjunction with those of the eyes, or in alteration with, or in succession to them.

In treating them, you are to bear in mind the peculiar constitution from which this succession of symptoms derives its origin. You are not to be contented with the local means which the state of the joint requires; you must bear in mind the state of the constitution. In the first place, it may be necessary to take blood from the arm; it would be proper to evacuate the alimentary canal by purgatives with antimony; and after adopting these means I think you will considerably abridge the duration of the disease by giving mercury; you will lessen the intensity of the symptoms, and thereby prevent those important effects, when a limb is the seat of affection, which often take place under these circumstances; there would be no objection to carry the medicine to the extent of affecting the mouth. The colchicum is usually employed in these cases. So far as local treatment goes, you will find that cupping or leeches, and fomentations, will be advantageous; but you will also find, that these local remedies will not answer the purpose without the adoption of the more general means which I have pointed out to you. Such complaints are exceedingly tedious, as must be all complaints in joints which arise from constitutional causes. As we cannot speedily alter the state of the constitution from which the disease occurs, we cannot rapidly cure the complaint. Persons are inclined to try the removal of this chronic state of the joints by blisters. I think blistering will not do good when there is any thing like active inflammation remaining. When patients have had these complaints for a length of time, we frequently find benefit produced by removal to the sea-side, and employing a course of sea-bathing; but after all, this healthy state, when it is produced, is not so much from the means just mentioned as from the complaint ultimately wearing itself out.